HARMONY

Stereo Music System
with CD Player & AM/FM Tuner

SERVICE MANUAL

JBL Consumer Products Inc.
250 Crossways Park Drive
Woodbury, N.Y. 11797
1-800-336-4JBL in the USA

A Harman International Company

Rev C 1/2004

LASER BEAM SAFETY PRECAUTIONS

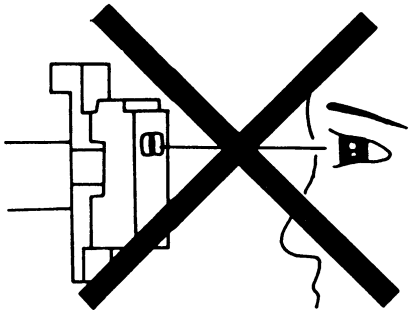
CLASS 1 LASER PRODUCT

CLASS 1
LASER PRODUCT

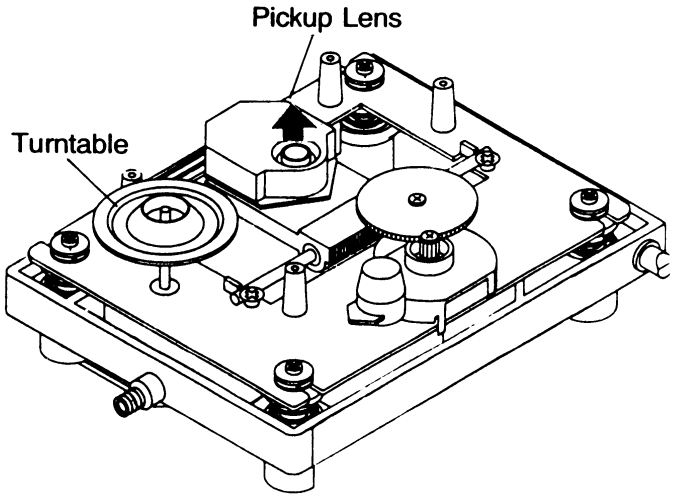
CAUTION
Invisible laser radiation when the unit is open. DO not stare into beam.

CAUTION: USE OF ANY CONTROLS, ADJUSTMENT, OR PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.



This compact disc player uses a pickup that emits a laser beam. The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 1 foot away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.



CAUTION:
Using controls and adjustment, or doing procedures other than those specified herein, may result in hazardous radiation exposure.

SAFETY PRECAUTIONS

CAUTION

RISK OF ELECTRIC SHOCK.
DO NOT OPEN.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Caution: To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Attention: Pour prévenir les chocs électriques ne pas utiliser cetre fiche polarisée avec un prolongateur, une prise de courant ou une autre sortie de courant, sauf si les lames prévent être insérées à fond sans en laisser aucune partie à découvert.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

HANDLING LASER PICKUP

The laser diode in the optical system of this player can be damaged by electrostatic discharge from your clothes or your body. Proper electrostatic grounding for service personal is required during servicing.

BEFORE REPAIRING THE COMPACT DISC PLAYER

Preparation

- Human Body Grounding:
  Many of the components used in this compact disc player, including the laser pickup, are sensitive to electrostatic discharge. Service personal should be grounded with an electrostatic armband (1 Mohm).

- Caution:
  Static charge on clothing does not escape through a body grounding wrist band.
  Be careful not to contact the pickup or electrical components with your clothing.

- Workbench and Tool Grounding:
  A properly-grounded electroconductive plate (1 Mohm) or metal sheet should be fitted to the workbench surface. Tools and instruments (such as soldering irons and scopes) should be grounded to prevent AC leakage.

Incorrect

Fig. 1

Correct

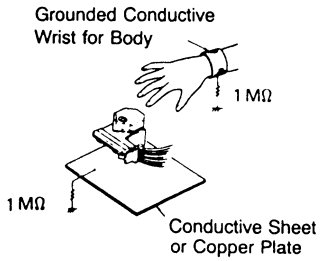


Fig. 2

Note: Laser diodes are so susceptible to damage from static electricity that, even if a static discharge does not ruin a diode, it can shorten its life or cause it to work improperly.

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FEATURES

- **2-Way Loudspeaker System with Powered Woofer**. Dual 3” drivers and a 4” long-throw woofer.
- **40 Watts Total System Power.**
- **Front Load CD Player**
- **16 AM/FM Presets**
- **Wake Up to CD**
- **Remote Control**
- **Dual Alarms**
- **Auxiliary Input**

SPECIFICATIONS

GENERAL

Power Supply
- AC Line . . . . . 230V, 50Hz (VDE)
- AC Line . . . . . 120V, 60Hz (UL)
- AC Line . . . . . 100V, 50Hz (JAPAN)
- Rated Watts . . . . . 40 Watts

Auxiliary Input Impedance . . . . . 47k ohms

Auxiliary Input Sensitivity 500mV

Dimensions: (H x W x D)
- Inches . . . . . 10-1/4 x 12-3/8 x 9-1/2”
- Millimeters . . . . . 260 x 314 x 241mm

Weight:
- Pounds . . . . . 14-3/4 lbs
- Kilograms 6.6kg

FM TUNER SECTION

30dB Usable Sensitivity 10µV

Signal-to-Noise Ratio . . . . . 60 dB

I-F Rejection . . . . . 60 dB

Image Rejection . . . . . 70 dB

Frequency Range . . . . . 87.5MHz - 108MHz (VDE/UL)

Frequency Range . . . . . 76MHz - 90MHz (JAPAN)

AM TUNER SECTION

20dB Usable Sensitivity 500µV/m

Signal-to-Noise Ratio . . . . . 45 dB

I-F Rejection . . . . . 50 dB

Image Rejection . . . . . 30 dB

AGC Figure of Merit . . . . . 45 dB

Selectivity . . . . . 25 dB

I-F Whistle 5%

Frequency Range . . . . . 522kHz - 1620kHz (VDE/JAPAN)

Frequency Range . . . . . 522kHz - 1710kHz (UL)

CD SECTION

Frequency Response . . . . . 100Hz - 20kHz

Separation (1 kHz) . . . . . More than 40 dB

Signal to Noise Ratio . . . . . 60 dB

AMPLIFIER SECTION

Power Output . . . . . 40 Watts

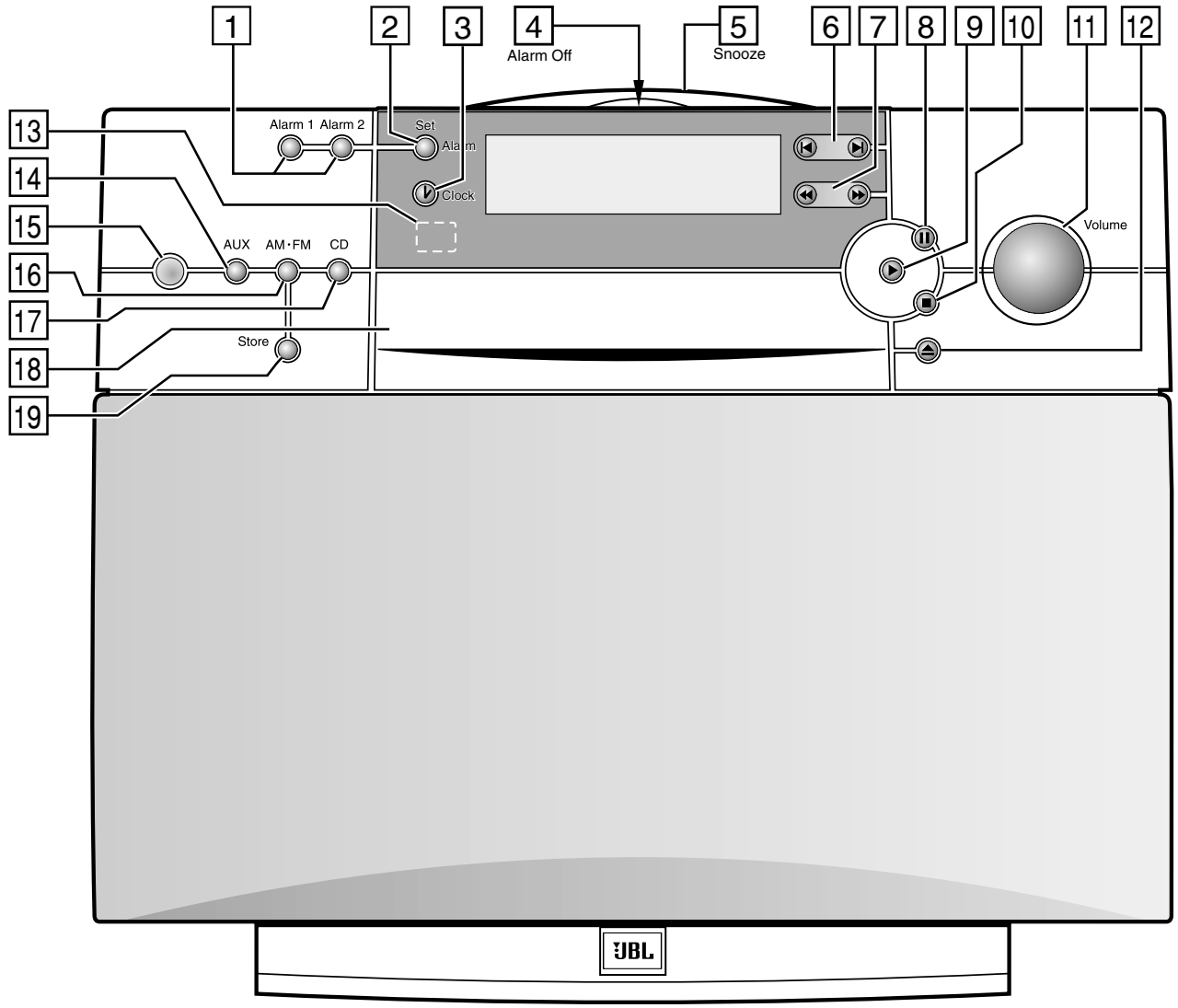
Power Band Width . . . . . 100Hz - 20kHz

Rated Impedance . . . . . 4 Ohms

Signal to Noise Ratio AUX . . . . . 65 dB

Equalizer Range 200Hz, 500Hz, 4kHz, 10kHz, 20kHz . . . . . ±10 dB

HARMONY CONTROLS AND THEIR FUNCTION



1. Alarms 1 & 2 - To turn on alarm 1 or 2 push "Alarm 1" or "Alarm 2" on the Harmony or Remote until the note symbol appears in the display to wake to music or until the sound symbol appears to wake to tone alarm. Push until symbols disappear to turn off the alarm.

2. Alarm Set - To set either alarm 1 or 2 push "Alarm Set" until "Alarm 1" or "Alarm 2" flashes in the display. While "Set" is displayed, push the forward on the "Forward/Reverse" button, #7 to adjust the minute. To adjust the hour push the reverse on the "Forward/Reverse" button, #7.

3. Clock - To set the clock press and release the "Clock Set" button. While "Set" is displayed, push to adjust the minute and push the to adjust the hour. To change the clock to a 24-hour display push and release the "Clock Set" button. While "Set" is displayed, push and hold the "Clock Set" button for one second. Repeat the procedure to change back to a 12-hour display.

4. Alarm Off - Push this button to turn off the alarm. The alarm will then reset and activate again at the set time the next day.

5. Snooze - Push this button to temporarily shut off the alarm. The alarm will sound again in 5 minutes.

6. Preset Station Selector - Push or on the Harmony or Remote to choose the desired preset station. For creating preset stations stored in memory see #19. When playing CD's push or to skip to a different track.

7. Tuner/Scan - To tune to a station press forward or reverse to the desired location. To have the tuner search for the next strong station push and hold or for one second on the Harmony or remote. Release the button when scanning begins. The tuner will automatically advance to the next station that has a strong signal. While playing a CD pressing "Back" or "Forward" will cause the CD to scan backward or forward within the existing track being played.

8. Pause - Press this button on the Harmony or remote to cause the CD to pause.

9. Play - Press this button on the Harmony or remote to cause the CD to begin playing.

10. Stop - Pressing this button will stop the CD playing.

11. Volume - To raise the volume turn the knob on the Harmony clockwise or push "+" on the remote. To lower the volume turn the knob counterclockwise or push "-" on the remote.

12. Open - This button will open the CD holder tray ejecting the CD.

13. IR Receiver - This is the area where the Infrared Remote Receiver is located.

14. Auxiliary - Press this button to activate the auxiliary audio input. This allows for the hookup of a cassette deck, hi-fi VCR, CD changer, computer or another audio source.

15. Power Indicator - This light indicates that the Harmony is on when lit. To turn the Harmony on push either "AUX", "AM/FM", "CD", "PLAY" or "ALARM OFF" on the Harmony or remote (or ⏏ on the Harmony or "Standby" on the remote).

16. AM/FM - This button allows the switching between the AM and FM selection of the tuner.

17. CD Selector - Press this button on the Harmony or remote to change to CD playing mode.

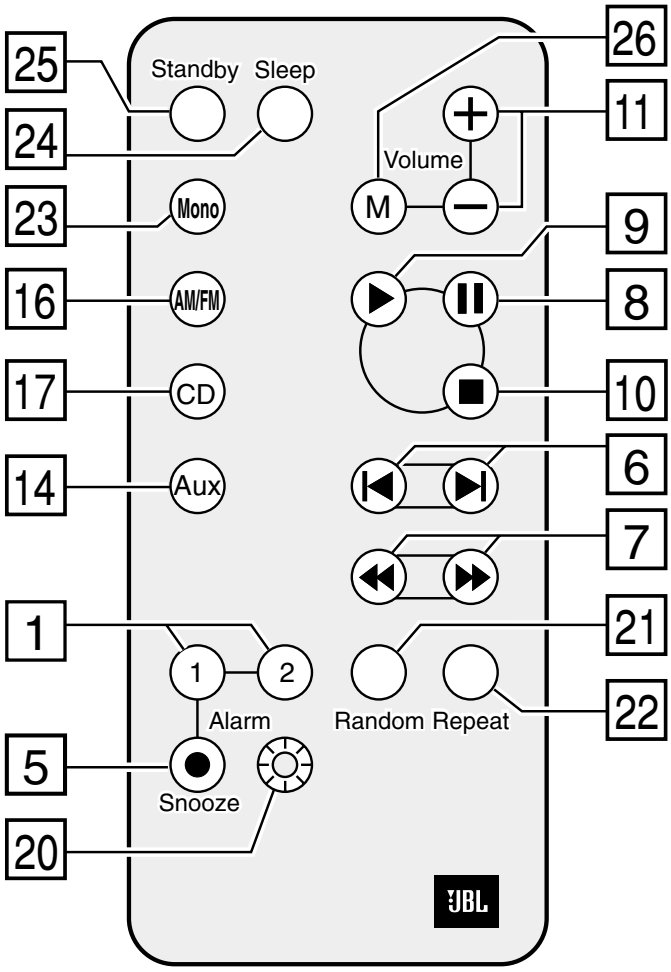
18. CD Door - this door opens allowing the CD tray to slid out.

19. Store - Tune to the station that you wish to place in memory. Push "Store" on the Harmony. To skip between preset stations push ⏮ or ⏭.

20. Display - Push this button to turn off the CD time display or tuner display. When Harmony is off, pushing this button will light up the clock display for five seconds.

21. Random Play - Push this button to play the tracks of a CD in random order. The Harmony will automatically delete each track it has played.

22. Repeat - Push Repeat to repeat the entire CD playing. Push Repeat again to repeat a single track only. The "Repeat" indicator will flash. Note: If "Random" and "Repeat" are both engaged, the CD player will randomly play the disc, deleting all played tracks, until the disc is finished. It will then randomly play the disc again.



23. Mono - Pressing this button will play the selected station without any stereo separation. There will be much less background noise.

24. Sleep - This Button is used to turn the unit off automatically after a selected amount of time in 10 minute increments up to 90 minutes. To turn off sleep mode, push "Sleep" until "00" is indicated in the display.

25. Standby - Pressing this button on the remote will cause the Harmony to turn on.

26. Mute - Press this button to lower volume completely on the remote control, causing the power indicator to flash. When "Mute" is pushed again, the volume will return to its original level.

Service Bulletin

Service Bulletin JBL9808 rev1 - January 2004

This is considered a Major repair

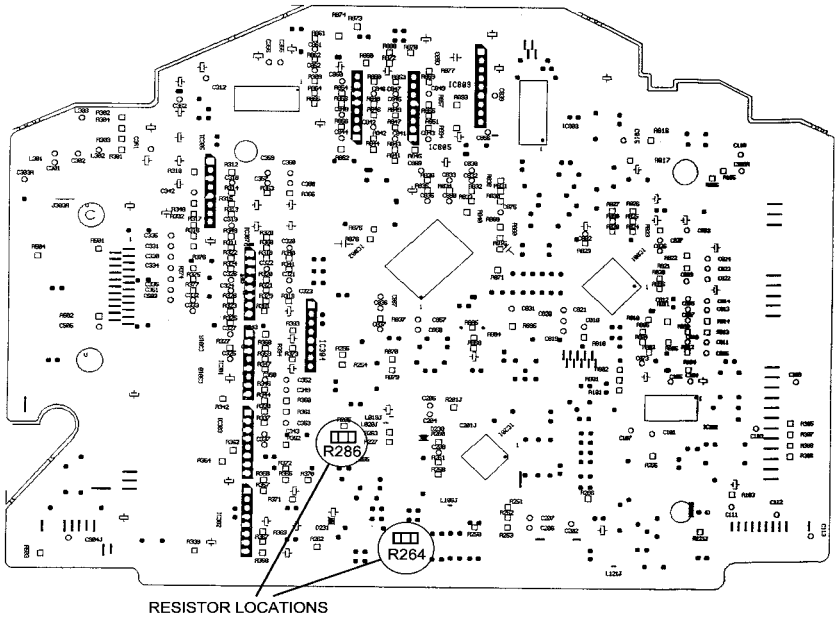
To: All JBL Service Centers

Model: Harmony AM/FM, CD Compact Sound system

Subject: Loss of all Control Functions or FM station Presets

In the event you receive a Harmony sound system for the complaint "all the controls stopped working" or "the FM station presets disappear, even though I've never unplugged the unit", perform the following modification. This should also be performed as an upgrade if a unit is serviced for *any* reason in the serial number range listed below:

1) To access & detach the CD assembly, obtain JBL Service Bulletin #JBL9804 (Harmony Disassembly Procedure) and follow steps 1 – 7.
2) Locate R264 and change from a 4.7kΩ to a 2.2kΩ SMD resistor – JBL part #QCF6A53-222.
3) Locate R286 and change from a 82kΩ to a 68kΩ SMD resistor – JBL part #QCF0851-683.
4) Continue with step 8 of the Harmony Disassembly Procedure to remove the CD assembly from the Main PCB. It is not necessary to remove any cable connectors to perform the next step.
5) Locate Lithium Battery BT201 located at the edge of the Main PCB; replace with JBL part # FBE0030-001. Battery *with* clips must be replaced on Main PCB.
6) Attach CD assembly back onto Main PCB, and replace assembly back into unit following all disassembly instructions in reverse order.
7) Test unit by confirming all controls work and FM station presets hold their memory.



NOTE: The R286 silkscreen on the Main PCB may be illegible or mismarked as "R73S".

Model	Serial number 120V	Serial number 230V	Status	Action
Harmony	AC0022-01001 to AC0022-36021	AC0023-01001 to AC0023-15720	Lithium battery circuit failure	Change R264 from 4.7K to 2.2KΩ Change R286 from 82K to 68KΩ Replace battery BT201
Harmony	AC0022-36022 and above	AC0023-15721 and above	Modified by factory	NONE REQUIRED

HARMONY SERVICE BULLETIN JBL9809

Service Bulletin JBL9809 - September 1998 This is considered a Major repair
To: **All JBL Service Centers**
Model: **Harmony AM/FM, CD Compact Sound system**

Subject: Sleep Mode Display Brightness

In the event you receive a Harmony sound system with the complaint “the display is too dim in the Sleep mode”, perform the following modification:

1) To access & detach the CD assembly, obtain JBL Service Bulletin #JBL9804 (Harmony Disassembly Procedure) and follow steps 1 - 7.

2) Remove the volume control knob by pulling it straight off; remove the 7/16” mounting nut and washer.

3) To expose the Control PCB follow steps 1 - 5 only in the second section of the disassembly procedure.

4) Unplug the upper connector near the “Snooze” button to be able to separate the two chassis halves; removing more connectors is not necessary.

5) Lay the unit’s front half face down on a padded surface.

6) Pry any beads of hot glue off and away from the 6 connecting tabs holding the Control board in place.

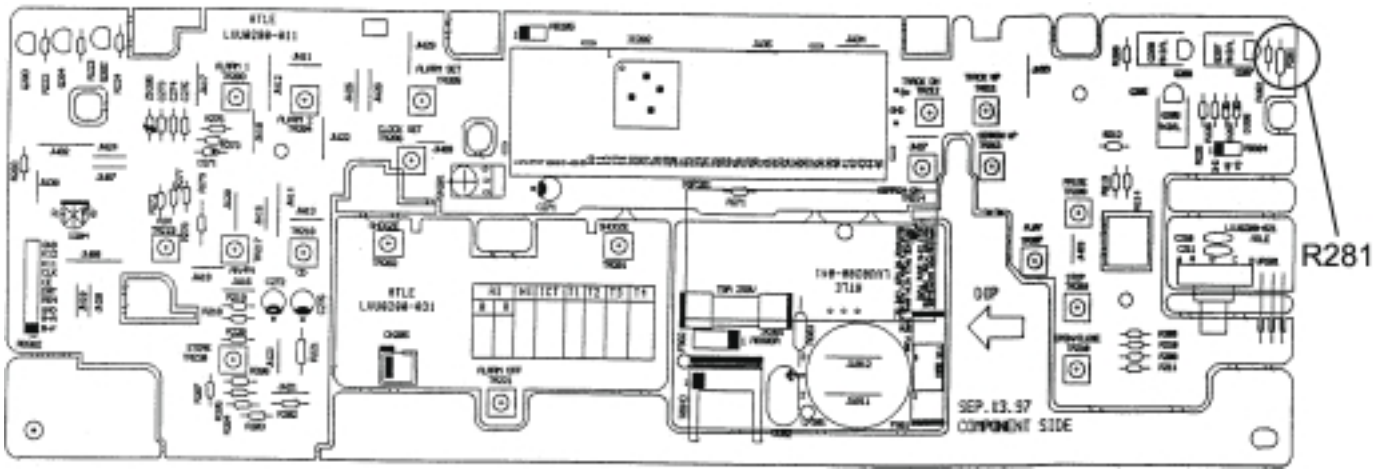
7) Remove the (3) silver-colored screws holding the control board to the unit.

8) Carefully pull the connecting tabs back one at a time; remove the Control board from the unit.

9) Turn board display-side up. Locate R281 and change from a 100 to a 27 resistor - JBL part# A091270.

10) Return Control board to unit and reconnect all tabs; follow all disassembly instructions in reverse order.

11) Observe brightness of the unit’s display in Sleep mode, and test all other functions.



Model	Serial number 120V	Status	Action
Harmony	AC0022-01001 to AC0022-03195	Display too dim in Sleep Mode	Replace R281 with 27 resistor
Harmony	AC0022-03196 and above	Modified by factory	NONE REQUIRED

HARMONY SERVICE BULLETIN JBL9904

Service Bulletin JBL9904 – October 1999 Warranty labor rate: MAJOR repair
To: All JBL Service Centers
Model: Harmony AM/FM, CD Compact Sound system

Subject: Weak FM Reception

In the event you receive a Harmony sound system with the complaint "poor FM stereo reception", and FM reception does not improve by using the larger dipole-type FM antenna supplied with the unit, check the rear of the unit and see if there is a "LO/DX" switch. If there is no "LO/DX" switch, then the main PCB should be replaced as per the instructions below:

Note: It is very important that the various screws do not get mixed up and inserted in other locations upon reassembly. Make note, or label each removed screw set, and keep them apart from other screw sets.

1) Unplug all cables & connectors; place the unit on padded surface.

2) Carefully pry the speaker grille out of its recess and remove.

3) At the rear of the unit, remove the (4) screws holding the top cover on. Two are directly underneath the handle and two are near the center of the unit.

4) Slide the top cover straight back and off the unit, exposing the CD mechanism.

5) At the front of the unit directly below the CD tray, remove the two CD mounting screws.

6) Pull the CD mechanism out and away from the unit. Looking at the rear of the unit, the right side will pull away first and "pivot" around a thick wire cluster on the left side of the cabinet.

7) Unplug all connectors; make note of colors and locations - do not mix upon reassembly.

8) To separate CD assembly from Main PCB:
a) Remove the two lower, outermost screws from the small heatsink.
b) Remove the (4) silver-colored screws from the bottom of the PCB.
c) Remove the single screw from the RCA jack bracket.
d) Lift the CD mechanism off the PCB and carefully unplug the (4) remaining connectors.

9) Replace Main PCB with:
120v version - JBL part# APE0199-002, 230v version - JBL part# APE0199-001

Older version MAIN PCB	Newer version MAIN PCB
Board has "LVM0199-001 REV B" Printed on it	Board has "LVM0199-001 REV D" Printed on it
No external capacitors attached to PCB near IC201	2 external capacitors attached to PCB near IC201
Diode D231 is an axial part	Diode D231 is a SMD part

10) Reattach main PCB to CD assembly and follow all disassembly instructions in reverse order until unit is fully assembled.

11) Reattach either external FM antenna supplied with the unit. Plug in the power cord.

12) Test unit by pushing "AM/FM" button on Harmony or its remote control, then push the ⏩ button for one second and release for Harmony to begin tuner search for various stations.

13) Mark the bottom of the unit, under the base, with a bold black marker – "JBL9904".

Model	Serial Number 120V	Serial Number 230V	Status	Action
Harmony	AC0022-01001 to AC0022-13000*	AC0023-01001 to AC0023-135000*	Weak FM reception	Replace Main PCB with JBL part# APE0199-02 (120V) APE0199-001 (230V)
Harmony	AC0022-13001*	AC0023-135001* and above	New revision Main PCB	NONE REQUIRED

* Versions of the Harmony Sound system with the "LO/DX" switch at the rear of the unit are the latest version, and need no modification.

Service Bulletin

Service Bulletin JBL9905 Rev1 - December 2003 | This is considered a Minor repair

To: All JBL Service Centers

Model: Harmony AM/FM, CD Compact Sound system

Subject: CD drawer not opening

In the event that you receive a Harmony speaker system with the complaint "CD drawer does not open", check the items listed below:

1) Replace the Motor Belt:

a) At the rear of the unit, remove the (4) screws holding the top cover on. Two are directly underneath the handle and two are near the center of the unit.

b) Slide the top cover *straight back* and off the unit, exposing the CD mechanism. Belt and motor should now be exposed; replace belt with JBL part# BRW0002-001 *.

c) Replace cover and screws.

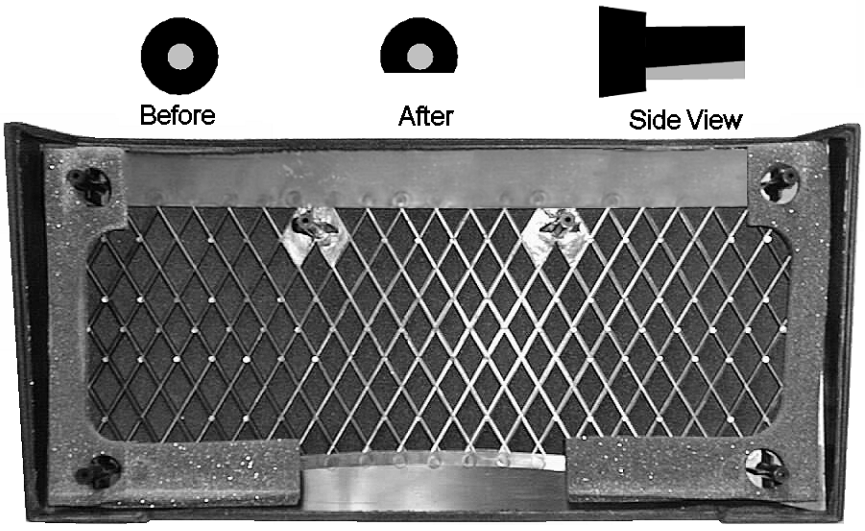
2) Make sure the top of the front grille is not interfering with the CD Drawer:

On some units, the bottom of the CD Drawer is so close to the top of the front grille it may brush against it and impede the drawer's movement. In this event:

a) Carefully pry the speaker grille out of its recess and remove.

b) The grille position can be lowered slightly by removing material from the six plastic grille pins with a rotary tool, file, or similar tool.

c) Re-mount the grille; you may have to push the grille down slightly to create the needed gap between the CD Drawer and the top of the grille.



3) Test unit by confirming original complaint not longer occurs.

* There were various versions of the CD mechanism ass'y; Motor Belt # BRW0002-001 should work for all versions.
The original CD mechanism had a motor pulley diameter of 0.53 in/13.4mm.
The later CD mechanisms had a motor pulley diameter of 0.81in/20.5mm.
White versions of the Harmony Sound system have the later version of CD Mechanism.

HARMONY SERVICE BULLETIN JBL9906

Service Bulletin JBL9906 - May 1999 This is considered a Major repair
To: **All JBL Service Centers**
Model: **Harmony AM/FM, CD Compact Sound system (Gray only)**

Subject: Noise when Playing CD's

In the event that you receive a Harmony speaker system with the complaint "there is a mechanical noise or ticking sound when playing Compact Discs, even when the volume is turned all the way down", replace the CD mechanism as per the instructions below:

Note: It is very important that the various screws do not get mixed up and inserted in other locations upon reassembly. Make note, or label each removed screw set, and keep them apart from other screw sets.

REPLACEMENT OF CD MECHANISM

1) Unplug all cables & connectors; place the unit on padded surface.

2) Carefully pry the speaker grille out of its recess and remove.

3) At the rear of the unit, remove the (4) screws holding the top cover on. Two are directly underneath the handle and two are near the center of the unit.

4) Slide the top cover straight back and off the unit, exposing the CD mechanism.

5) At the front of the unit, directly below the CD tray, remove the two CD mounting screws.

6) Pull the CD mechanism out and away from the unit. Looking at the rear of the unit, the right side will pull away first and "pivot" around a thick wire cluster on the left side of the cabinet.

7) Unplug all connectors; make note of colors and locations - do not mix upon reassembly.

8) To separate CD assembly from Main PCB:
- **a)** Remove the two lower, outermost screws from the small heatsink.
- **b)** Remove the (4) silver-colored screws from the bottom of the PCB.
- **c)** Remove the single screw from the RCA jack bracket.
- **d)** Unplug remaining connectors.

9) Replace CD mechanism with replacement JBL part # AFA0086-001.*

10) Attach CD assembly back onto Main PCB, and replace assembly back into unit following all disassembly instructions in reverse order. You must pry off the front plastic faceplate from the old CD mechanism and replace it on the new unit.

11) Test unit by confirming all controls work and original complaint not longer occurs.

* The original CD mechanism has a motor pulley diameter of 0.53 in/13.4mm.
The new CD mechanism, part # AFA0086-001, has a motor pulley diameter of 0.81in/20.5mm.
(The motor pulley is located near the laser warning label)

Model	Serial number 120V	Serial number 230V	Status	Action
Harmony (Gray)	AC0022-01001 to AC0022-22500**	AC0023-01001 to AC0023-17384**	Mechanical noise or ticking sound when playing CD's	Replace CD mechanism with JBL part #: AFA0086-001
Harmony (Gray)	AC0022-22501** and above	AC0023-17385** and above	New revision CD Mechanism	NONE REQUIRED

** White versions of the Harmony Sound system have the latest version of CD Mechanism.

FM LOCAL/DISTANCE SWITCH

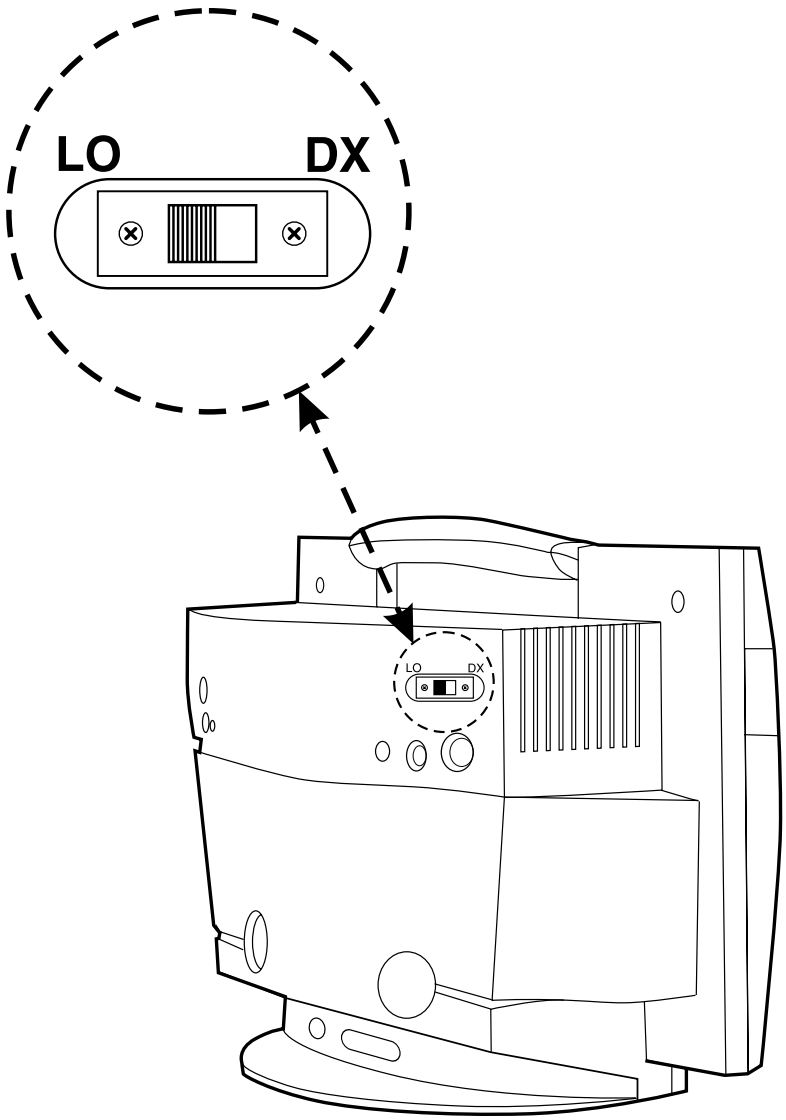
The Local/Distance Switch located above the antenna connectors on the back of the Harmony is featured to optimize the automatic tuning feature of Harmony's FM Tuner to the listening environment where the unit is operated.

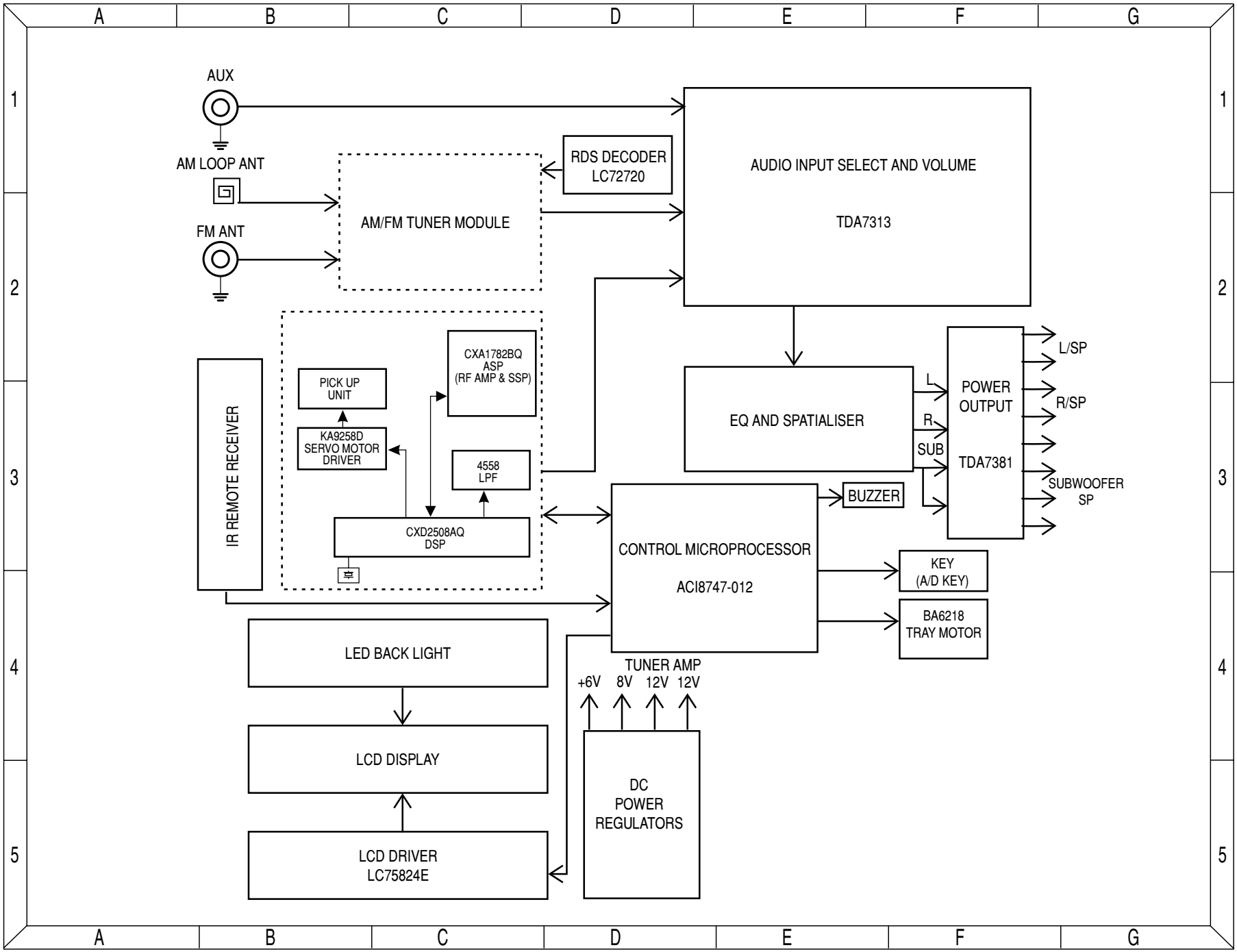
If the unit is used in a metropolitan area with many strong stations, the switch should be in **LO** (Local) position. If it is not, slide it to **LO** position using a tip of a pen. The Harmony should be able to automatically tune to and bring in strong and listenable FM stations.

If the unit is used in a rural area with few weak or distant stations, the switch should be in **DX** (Distance) position. If it is not, slide it to **DX** position using a tip of a pen. The Harmony should be able to automatically tune to and bring in most listenable FM stations.

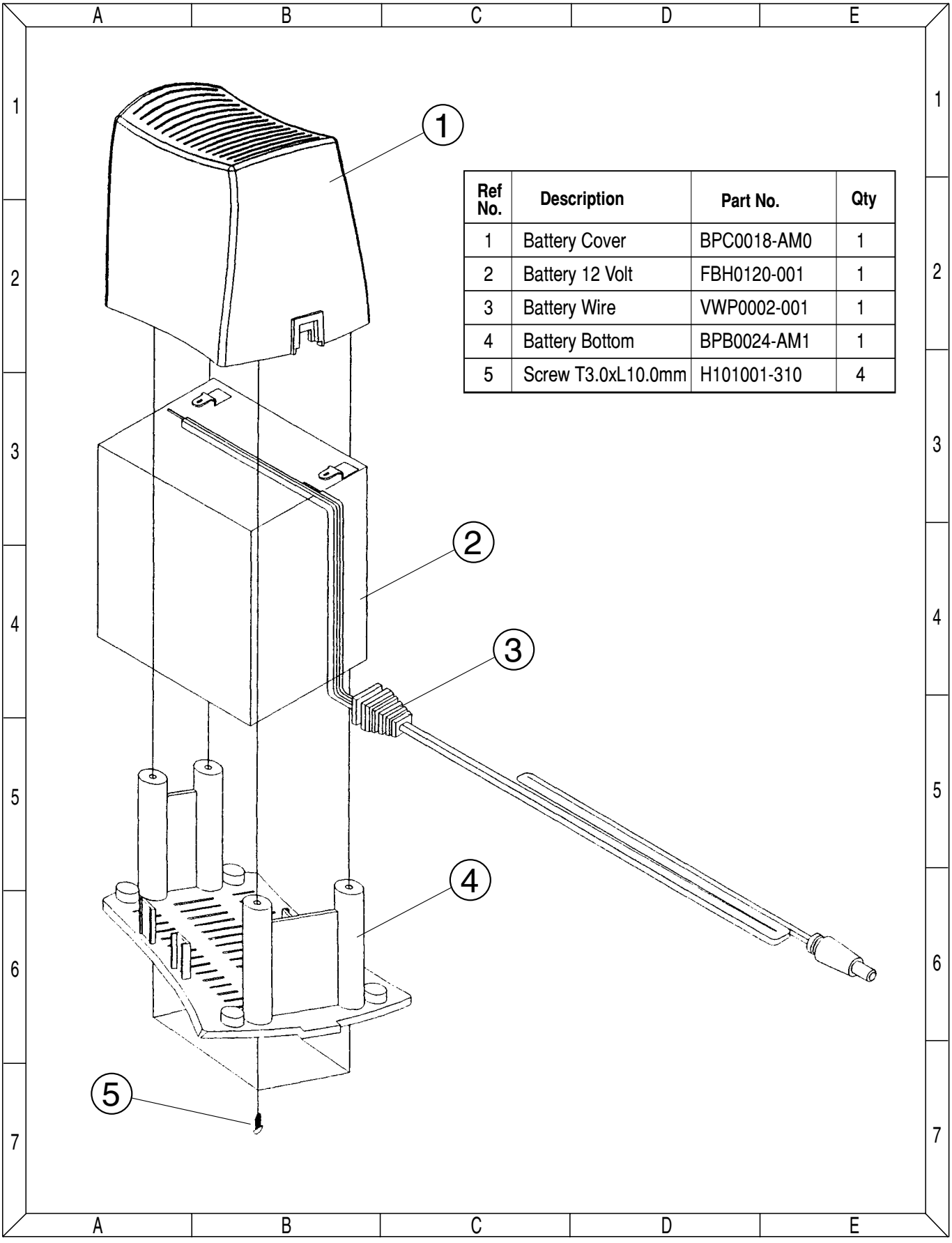
Harmony's ability to tune to more FM stations can be further improved by using the included T-antenna, mounting the T-antenna horizontally and high on a wall, or using an external or cable FM antenna.

If a particular FM station that you would like to listen to is still too weak to be tuned to automatically even with the unit in DX mode, you may be able to tune to it manually by repeatedly pressing and releasing the tune (⏮-or-⏭) buttons on the Harmony or on its remote, and then pressing the "Mono" button on the remote (make sure the word "Mono" is seen on the display). Keep in mind that if the station is too weak, it may still be too noisy to listen to.




A
B
C
D
E
F
G
1
2
3
4
5
AUX
AM LOOP ANT
FM ANT
AM/FM TUNER MODULE
RDS DECODER
LC72720
AUDIO INPUT SELECT AND VOLUME
TDA7313
IR REMOTE RECEIVER
PICK UP
UNIT
KA9258D
SERVO MOTOR
DRIVER
CXA1782BQ
ASP
(RF AMP & SSP)
4558
LPF
CXD2508AQ
DSP
EQ AND SPATIALISER
L
R
SUB
POWER
OUTPUT
TDA7381
L/SP
R/SP
SUBWOOFER
SP
BUZZER
CONTROL MICROPROCESSOR
ACI8747-012
KEY
(A/D KEY)
BA6218
TRAY MOTOR
LED BACK LIGHT
LCD DISPLAY
LCD DRIVER
LC75824E
TUNER AMP
+6V
8V
12V
12V
DC
POWER
REGULATORS

HARMONY BATTERY PARTS LIST



Ref No.	Description	Part No.	Qty
1	Battery Cover	BPC0018-AM0	1
2	Battery 12 Volt	FBH0120-001	1
3	Battery Wire	VWP0002-001	1
4	Battery Bottom	BPB0024-AM1	1
5	Screw T3.0xL10.0mm	H101001-310	4

HARMONY MECHANICAL EXPLODED VIEW

MOTOR GEAR ASS'Y

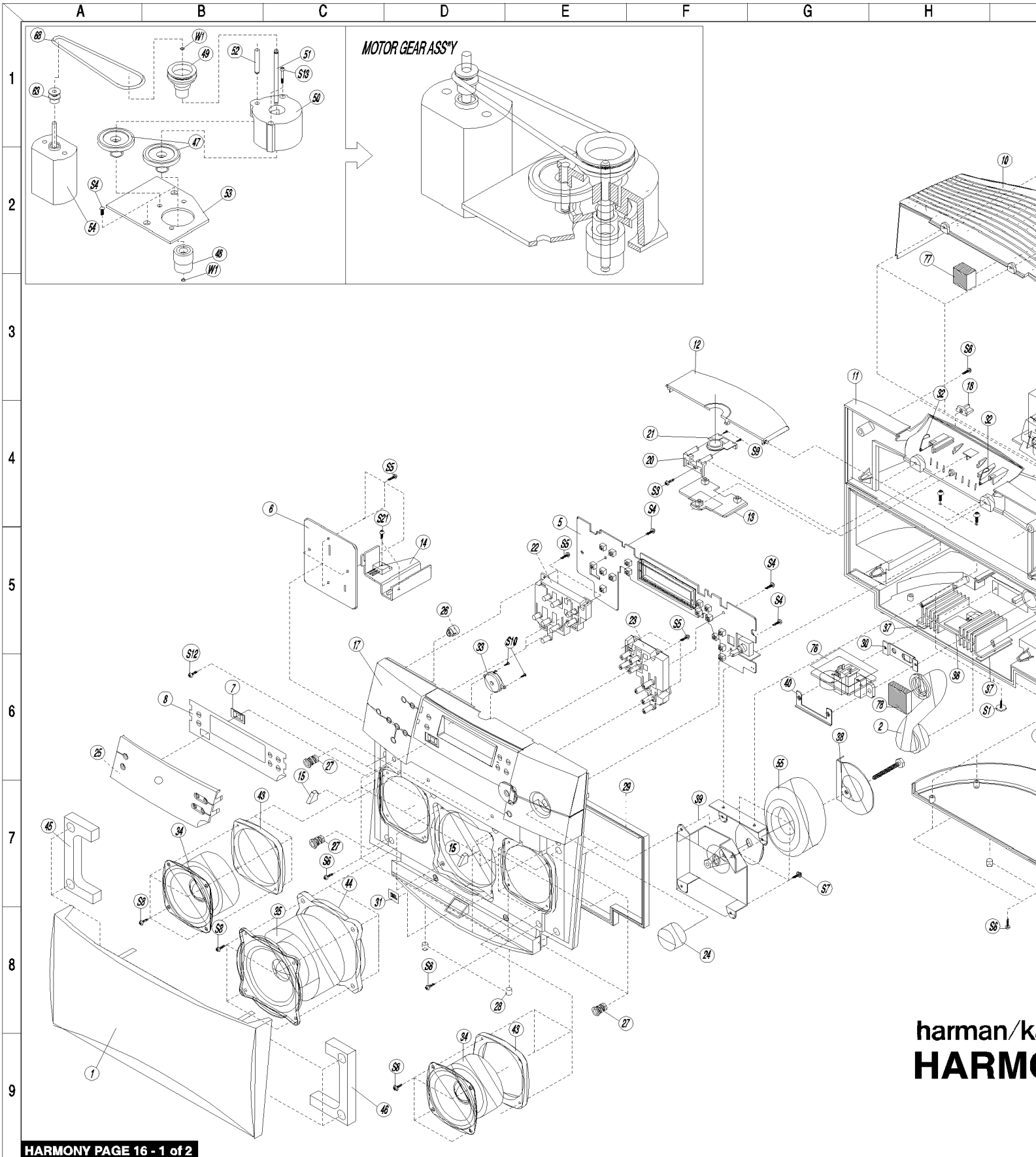
CD ASSY (DETAIL PARTS)

DETAIL GEAR ASS'Y

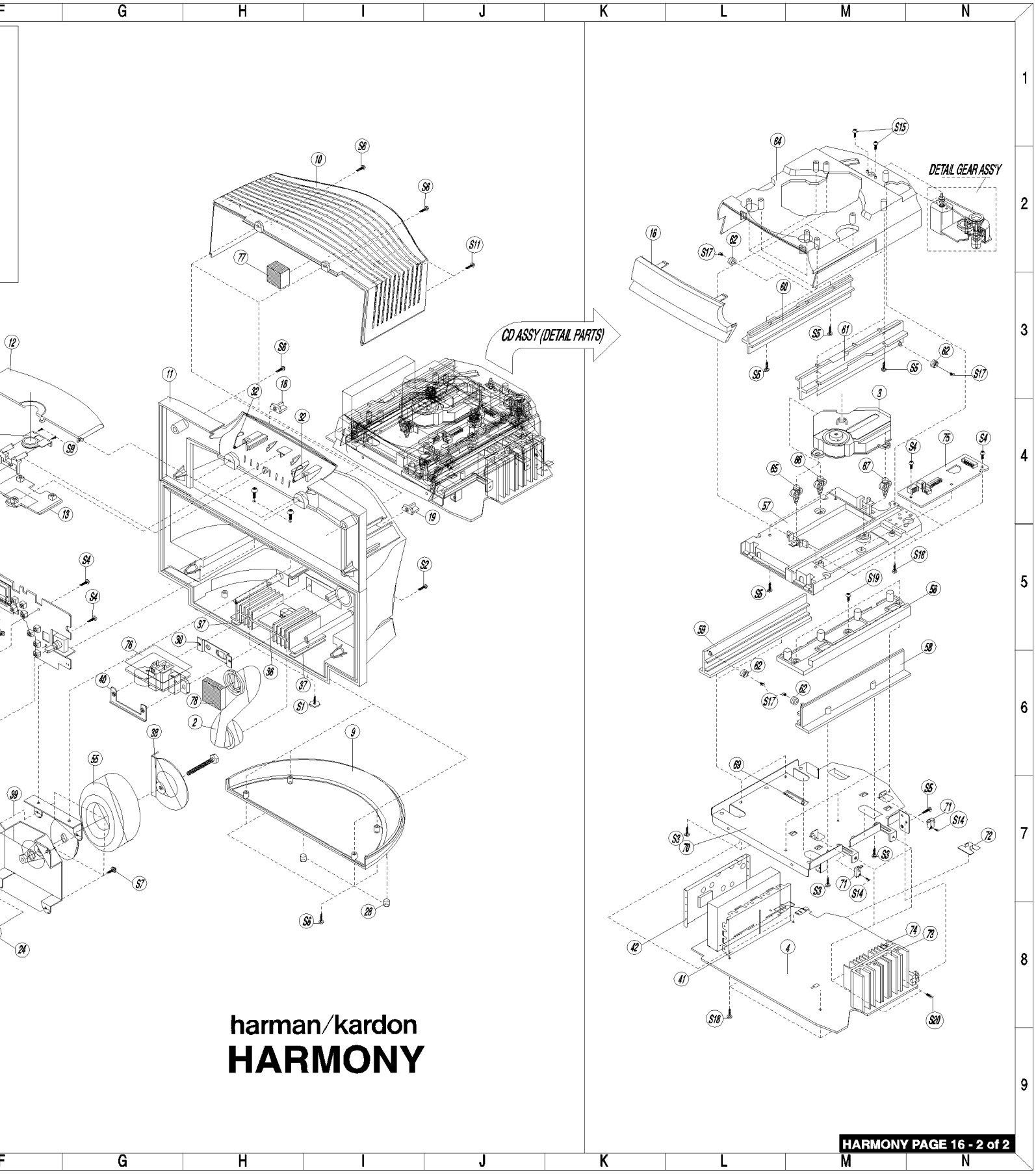
harman/kardon
HARMONY

HARMONY PAGE 16 - 1 of 2

HARMONY PAGE 16 - 2 of 2


MOTOR GEAR ASS"Y
harman/k
HARM

MONY MECHANICAL EXPLODED VIEW



HARMONY MECHANICAL PARTS LIST

Ref. #	Part Number	Description	Qty
1	AFA0079-001 AFA0079-002	Grill Assembly (Grey) Grill Assembly (White)	1
2	AFA0081-001	Port Assembly	1
3	AFA0081-001	CD Loader	1
4	APE0199-002 APE0199-001	Main PCB Assembly (120V) Main PCB Assembly (230V)	1
5	APE0200-002	Control PCB Assembly	1
6	APE0231-001	Power PCB Assembly	1
7	BPT0024-001	Filter	1
8	BNP0043-001	PVC Plate, Display Sheet	1
9	BPA0026-AM1	Bottom Cover	1
10	BPA0027-AM1	Rear Cover	1
11	BPB0016-AMO BPB0016-BBO	Back Cabinet (Grey) Back Cabinet (White)	1
12	BPB0018-AM1 BPB0018-BB1	Handle Cover (Grey) Handle Cover (White)	1
13	APE0200-031	Snooze/Alarm Control PCB Assy	1
14	GAL0091-001	Heat Sink	1
15	BPC0019-001	Wire Cover	2
16	BPD1020-AM0 BPD1020-BB0	CD Door (Grey) CD Door (White)	1
17	BPF0023-AM1 BFP0023-BB0	Front Cabinet (Grey) Front Cabinet (White)	1
18	BPH0030-Z01	Screw Holder (Left)	1
19	BPH0036-001	Screw Holder (Right)	1
20	BPH0035-001	PCB Holder	1
21	BPK1038-AN0 BPK1038-BC0	Alarm Knob (Grey) Alarm Knob (White)	1
22	BPK1052-001	Function Knob (Left)	1
23	BPK1053-001	Function Knob (Right)	1
24	BPK5039-AM0 BPK5039-BB0	Volume Knob (Grey) Volume Knob (White)	1
25	BPN0063-001 BPN0063-002	Display Window (Grey) Display Window (White)	1
26	BPN0064-000 BPN0064-001	LED Lens (Grey) LED Lens (White)	1
27	BRB0006-001 BRB0006-002	Grill Retainers (Grey) Grill Retainers (White)	6
28	RBR0007-001 BRB0007-002	Rubber Foot (Grey) Rubber Foot (White)	8
29	BRB0012-001	Plugger	1
30	BRB0013-001	Socket Rubber	1
31	CLJ0010-001	Logo Plate	1
32	DSU0020-001	Spring	2
33	FPZ0024-001	Buzzer	1
34	FTT1030-311	3" Midrange Driver	2
35	FTW2040-311	4" Woofer	1
36	GAL0100-001	Heat Sink	1
37	GF10012-001	Fiber Washer	2
38	GSE0179-001	Transformer Bracket	1
39	GSE0185-Z01	X'former Bracket	1
40	GSE0186-001	Socket Bracket	1
41	GTN0037-001	Tuner Cover (A)	1
42	GTN0038-001	Tuner Cover (B)	1
43	IVE0075-002	3" Speaker Sponge	2
44	IVE0076-006	4" Speaker Sponge	1
45	IVE0081-001	Rubber Sponge (Left)	1
46	IVE0082-001	Rubber Spponge (Right)	1
47	BPG1027-001	GearD	2
48	BPG1039-001	Gear Rail	1
49	BPG1041-002	Gear Top	1
50	BPH0027-001	Gear Holder	1
51	DSF0007-001	Shaft (A)	1
52	DSF0008-001	Shaft (B)	1
53	GSE0173-001	Motor Bracket	1
54	FMD0004-001	Motor DC 4V	1
55	TTN1204-001 TTN2304-001	Power Transformer (120v) Power Transformer (230v)	1 1
56	BPG1038-001	Gear Guide	1
57	BPH0029-Z03	CD Mechanism Holder	1
58	BPH003I 001	Rail Holder (Right)	1
59	BPH0032-001	Rail Holder (Left)	1
60	BPH0033-001	Turntable Holder (Left)	1
61	BPH0034-001	Turntable Holder (Right)	1
62	BPP0006-001	Pulley	4
63	BPP0007-001	Motor Pulley	1
64	BPT0012-AMO	Turntable	1
65	BRF0025-001	Cushion (A)	1
66	BRF0026-001	Cushion (B)	1
67	BRF0027-001	Cushion (C)	1
68	BRW0002-001	Motor Belt	1

Ref. #	Part Number	Description	Qty
69	DTB0800-034	Tubing	1
70	GSE0172-001	CD Base Holder Bracket	1
71	MSV0002-001	Lever Switch	2
72	GTN0033-001	Heat Sink	1
73	GAL0074-002	Heat Sink (A)	1
74	GAL0087-002	Heat Sink (B)	1
75	APE0201-021	CD Connector PCB Assembly	1
76	APE0020-042***(120v)*** APE0200-041***(230v)***	AC-DC Power PCB Assembly	1
77	IVE0084-001	Sponge	1
78	IVM0001-003	Acoustic (To Port)	1
S1	H016502-316	Screw W6#20xL16.0mm Washer head	2
S2	H060308-112	M3.0x0.5PxL12.0 mm Flat Head	2
S3	H101001-106	Screw T3.0xL6.0 mm	5
S4	H101001-108	Screw T3.0x1.27P-2RHxL8.0 mm	7
S5	H101001-310	Screw T3.0xL10.0 mm	21
S6	H101001-312	Screw T3.0xL12.0 mm	16
S7	HI 01002-312	Screw T3.0xL12.0 mm W/Washer	4
S8	H101012-312	Screw T3.0x1.27PxL12.0 mm Round Head	12
S9	H101501-106	Screw T2.6xL6.0 mm	2
S10	H106401-105	Screw T2.0x0.635PxL5.0 mm	2
S11	H120301-110	Screw M3.0x0.5PxL10.0 mm	5
S12	H120301-312	Screw M3.0x0.5PxL12.0 mm W/Washer	2
S13	H060201-116	Screw M2.6x0.45PxL16.0 mm	2
S14	H060001-108	Screw M1.7xL8.0 mm	2
S15	H060101-304	Screw M2.0x0.4PxL4.0 mm	2
S16	H101001-320	Screw T3.0x1.27PxL20.0 mm	1
S17	H101502-205	Screw T2.6x1.058PxL5.0 mm Washer Head	4
S18	H120301-106	Screw T3.0xL6.0 mm	4
S19	H120301-306	Screw M3.0x0.5PxL6.0 mm	3
S20	H120301-308	Screw M3.0x0.5PxL8.0 mm	2
W1	HWC4016-302	Washer OD4.0xID1.6xTO.2mm Mylar	2
S21	H100301-106	Screw T3.0xL6.0 mm	2
	4999A-376	CON/WIRE 2 COND 420 mm P=2.5 mm UL2468 22 GA MAIN PCB CN502 TO R SPK	1
	4999A-377	CON/WIRE 2 COND 240 mm P=2.5 mm UL2468 22 GA POWER PCB CN503 TO SUBWOOFER SPK	1
	4999A-378	CON/WIRE 4 COND 220 mm P=2.5mm UL2468 22 GA POWER PCB CN503A TO MAIN PCB CN503B	1
	4999A-393	CON/WIRE 4 COND 500 mm UL1007 22 AWG POWER PCB CN903A TO MAIN PCB CN903B	1
	4999A-394	CON/WIRE 10 COND 500 mm UL2877/2468 26AWG	1
	APE0200-021	R-ENCODER	
	APE0200-031	ALARM ASSY	
	APE0200-042	POWER ASSY	
	APE0199-002	(120V) MAIN PCB ASSY	
	APE0199-001	(230V) MAIN PCB ASSY	
	AFA0086-001	COMPLETE CD MECHANISM ASSY	

CD Assy

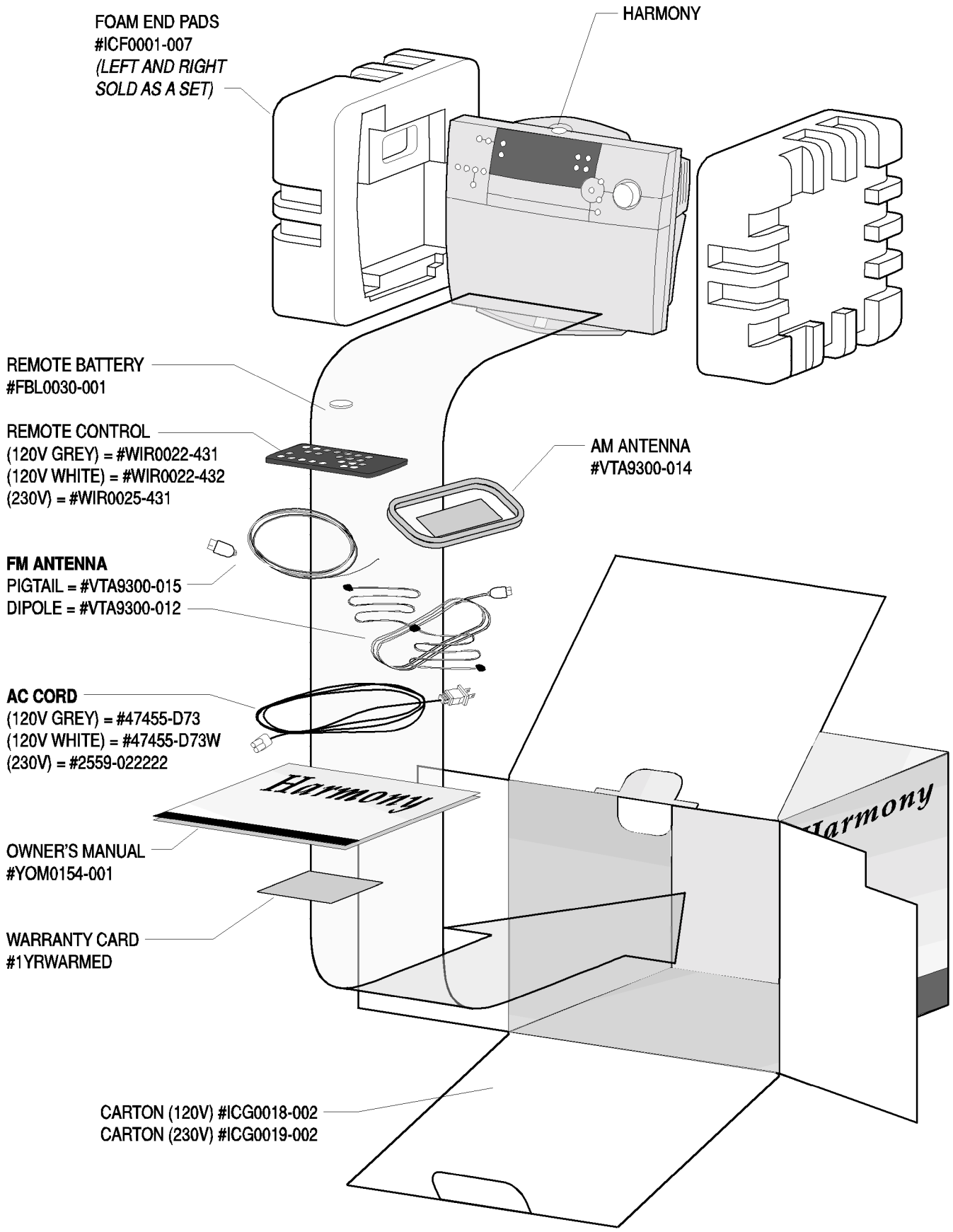
	AFA0053-002	GEAR ASSY	1
	APE0199-002	MAIN ASSY MAIN PCB AY W/O RDS (UL)	1
	BPG1038-001	GEAR GUIDE TO CD LOADER-1	1
	BPH0029EZ04	CD HOLDER MECHANICAL HARMONY (WHITE)	1
	BPH0031-001	HOLDER RAIL HOLDER (R)	1
	BPH0032-001	HOLDER RAIL HOLDER (L) CD LOADER	1
	BPH0033-002	HOLDER TURNTABLE (L)	1
	BPH0034-001	HOLDER TURNTABLE (R)	1
	BPP0006-001	PULLEY TO MOTOR	4
	BPP0007-002	PULLEY MOTOR (ABS + PA) CD ASSY	1
	BPT0012CBB0	TURNTABLE PEARL WHITE (M2) SHARP RADIO (JBL)	1
	BRF0034-001	CUSHION SANYO IEA2443A08103 RUBBER (A)	1
	BRF0035-001	CUSHION SANYO IEA2443A08102 RUBBER (B)	2
	BRW0002-001	MOTOR BELT D=39.7 CD BASE HOLDER	1
	FMD0004-001	MOTOR (SHAFT 37.00mm)	1
	GSE0172-001	BRACKET CD BASE HOLDER	1
	GSE0173-001	BRACKET MOTOR BRACKET LEVER SW	1

Ref. #	Part Number	Description	Qty
	H060001-108	SCREW M1.7x0.35PxL8.0 mm PAN HEAD NICKEL TO MOTOR-2	2
	H060101-304	SCREW M2.0x0.4PxL4.0 mm PAN HEAD BLACK RAIL HOLDER R+L -4	2
	H101001-106	SCREW T3.0x1.27p-2RHxL6.mm PAN HEAD NICKEL, MOTOR BKT TO CD HOLDER-2	4
	H101001-108	SCREW T3.0x1.27p-2RHXL8.mm PAN HEAD NICKEL PCB TO CD MECHA HOLDER-2, HOLDER TO T/TABLE-4, T/TABLE HOLDER(R)(L) TO	4
	H101001-310	SCREW T3.0x1.27p-2RHxL10mm PAN HEAD BLACK, T/TABLE-4, RCA JACK-1, CD MECHA HOLDER TO T/TABLE-1	9
	H101001-320	SCREW T3.0x1.27p-2RHxL20mm PAN HEAD BLACK, PULLEY TO RAIL HOLDER-2, TO T/TABLE HOLDER-2	1
	H101502-205	SCREW T2.6xL1.058PXL5.0 mm S.BRONZE WASHER HEAD BKT TO PCB-4	4
	H120301-106	SCREW T3.0x0.5pxL6.0 mm PAN HEAD NICKEL GEAR GUIDE TO BKT-3	4
	H120301-306	SCREW T3.0x0.5pxL6.0 mm PAN HEAD BLACK HEAT SINK TO CD BKT-2	3
	H120301-308	SCREW T3.0x0.5pxL8.0 mm PAN HEAD BLACK CD LOADER WIRE DRESSING-2	2
	IVS0007-001	FELT 100.0x10.0xT0.5 mm BACK W/ADHESIVE CD BASE HOLDER-1	2
	IVS0009-001	FELT L130.0xW20.0xT0.5mm BLK W/ADHESIVE CD OPEN / CLOSE SW	1
	MSV0002-001	LEVER SW MLS-1 SHINMEI 2 CD OPEN / CLOSE LEVER SW TO MAIN PCB CN802	2
	4999A-380	CON/WIRE 4 COND PIN1-2 120mm PIN3-4 220mm P=2.0mm CD OPEN/CLOSE MOTOR TO MAIN PCB CN803	1
	4999A-381	CON/WIRE 2 COND 260 mm UL1095 28 GA CD CONNECTOR PCB CN801B TO MAIN PCB CN801A	1
	4999A-382	CON/WIRE 12 COND 300 mm FFC 20696 1 CD CONNECTOR PCB CN804B TO MAIN PCB CN804A	1
	4999A-383	CON/WIRE 6 COND 320 mm FFC 20696	1

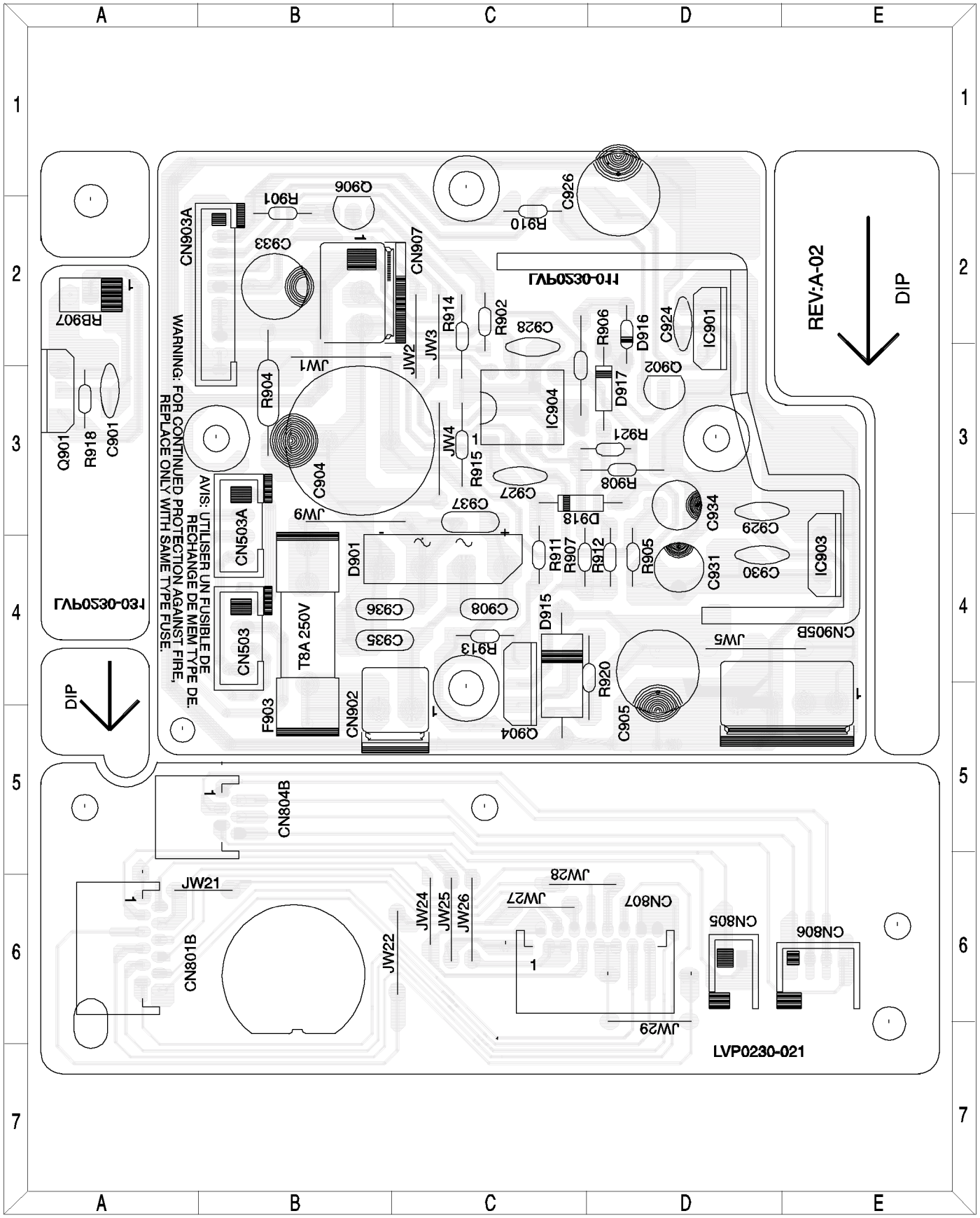
Gear Assy

	BPG1027-001	GEAR D CU-100	2
	BPG1039-001	GEAR RAIL	1
	BPG1041-004	GEAR TOP W/BIGGER HOLE	1
	BPH0027-001	HOLDER (GRAR) CU-100	1
	DSF0008-001	SHAFT (B)	1
	DSF0009-001	SHAFT GEAR SHAFT (A) HARMONY (NEW)	1
	H060201-116	SCREW M2.6x0.45PxL16.0 mm PAN HEAD NICKEL	2
	HWC4016-302	WASHER OD4.0xID1.6xT0.2 mm MYLAR	1
	HWC4020-002	WASHER OD4.0XID2.0XT0.2m MYLAR	2
	HWC5026-002	WASHER OD5.0XID2.6XT0.2mm MYLAR	1

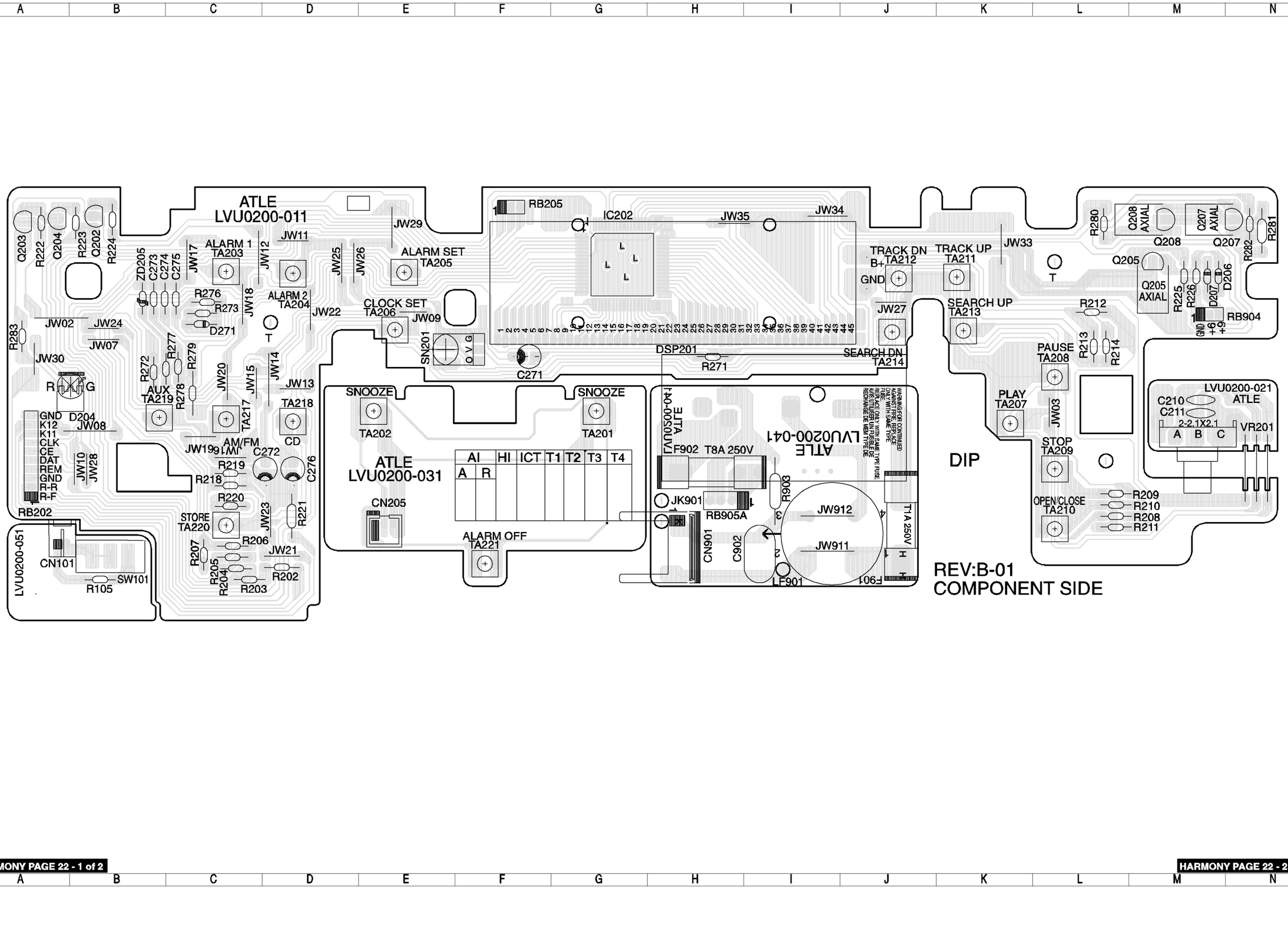
HARMONY PACKING EXPLODED VIEW

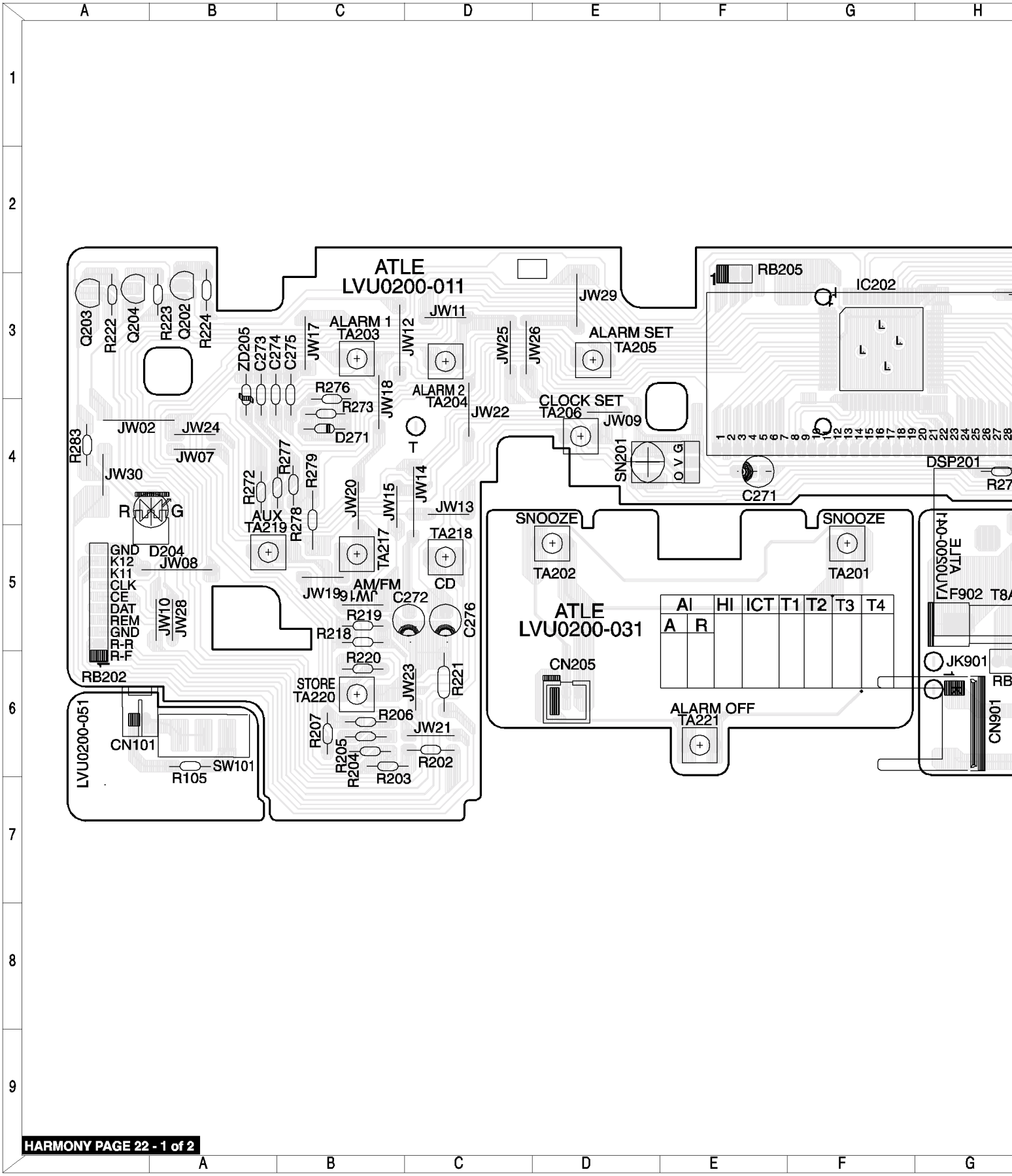


HARMONY POWER & INPUT PCB

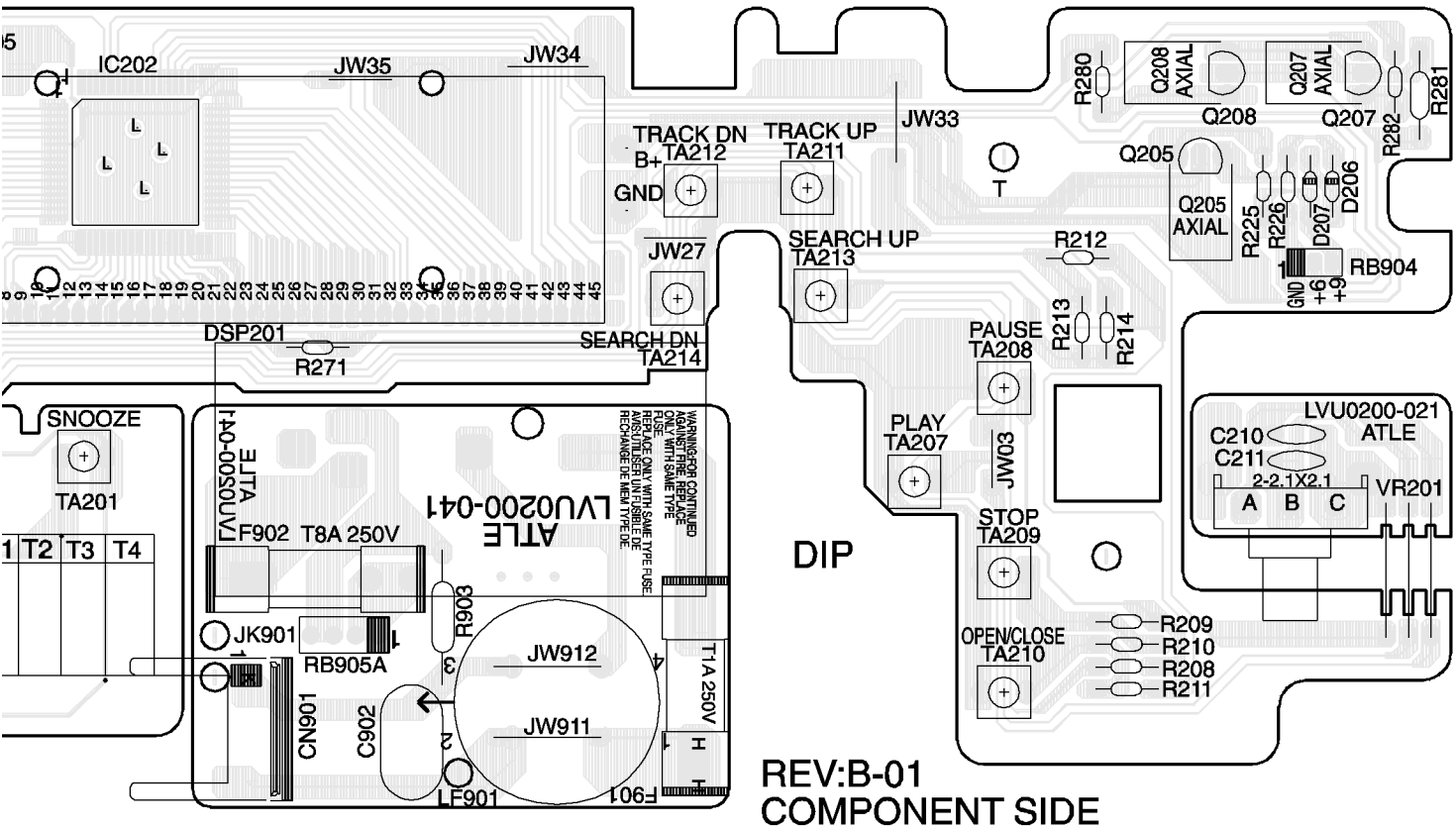


HARMONY CONTROL PCB

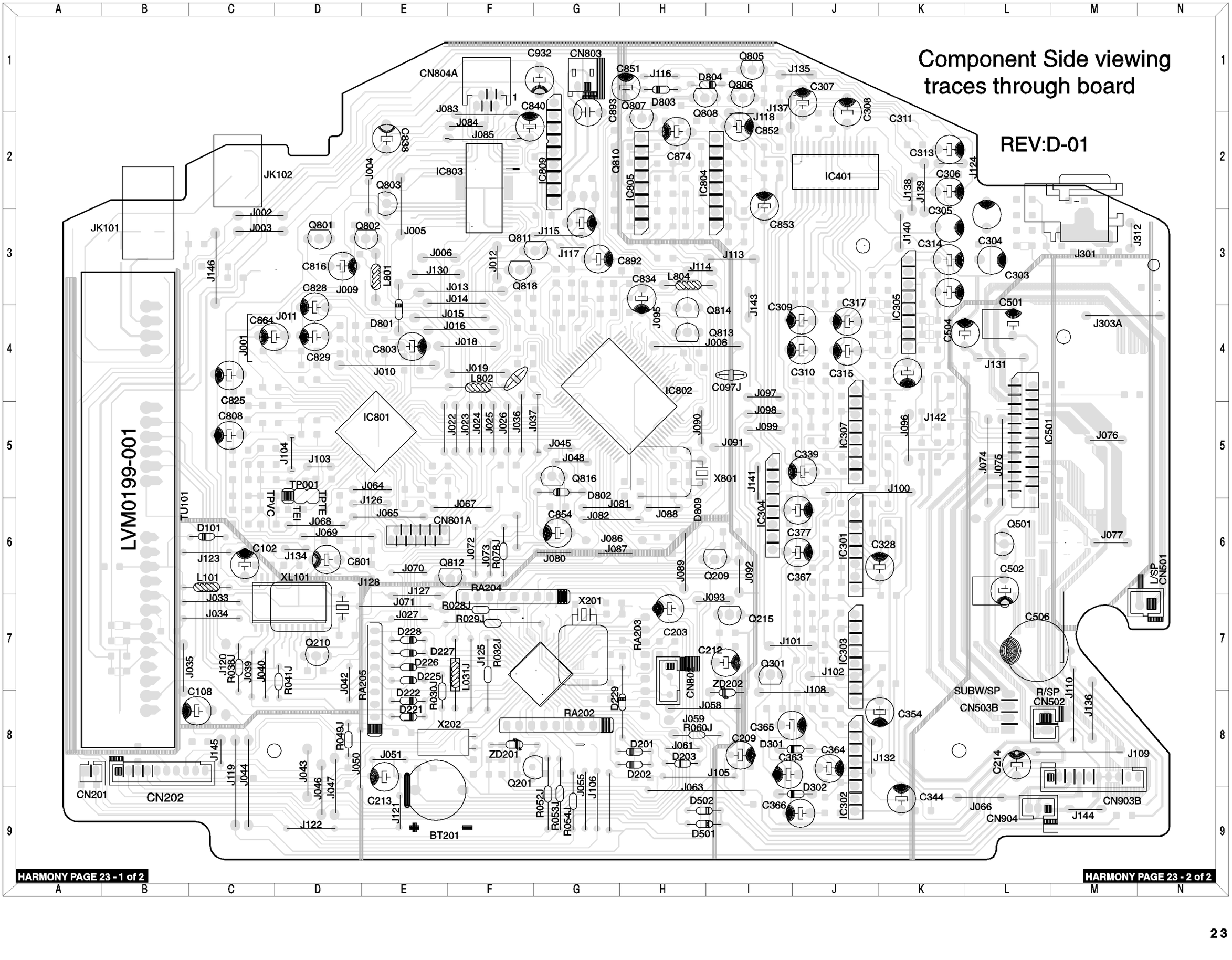



ATLE
LVU0200-011
Q203
R222
Q204
R223
Q202
R224
ZD205
C273
C274
C275
JW17
ALARM 1
TA203
JW12
JW11
JW29
JW25
JW26
ALARM SET
TA205
RB205
IC202
R276
R273
JW18
ALARM 2
TA204
JW22
CLOCK SET
TA206
JW09
JW02
JW24
JW07
D271
T
R283
JW30
SN201
O V G
C271
DSP201
R272
R277
R279
AUX
TA219
R278
JW20
JW15
JW14
JW13
TA218
R G
D204
GND
K12
K11
CLK
CE
DAT
REM
GND
R-R
R-F
JW08
JW10
JW28
TA217
AM/FM
CD
JW19
C272
C276
R219
R218
R220
STORE
TA220
JW23
R221
RB202
R206
JW21
R207
R205
R204
R203
R202
LVU0200-051
CN101
SW101
R105
SNOOZE
TA202
SNOOZE
TA201
ATLE
LVU0200-031
AI
HI
ICT
T1
T2
T3
T4
A
R
CN205
ALARM OFF
TA221
JK901
CN901
F902

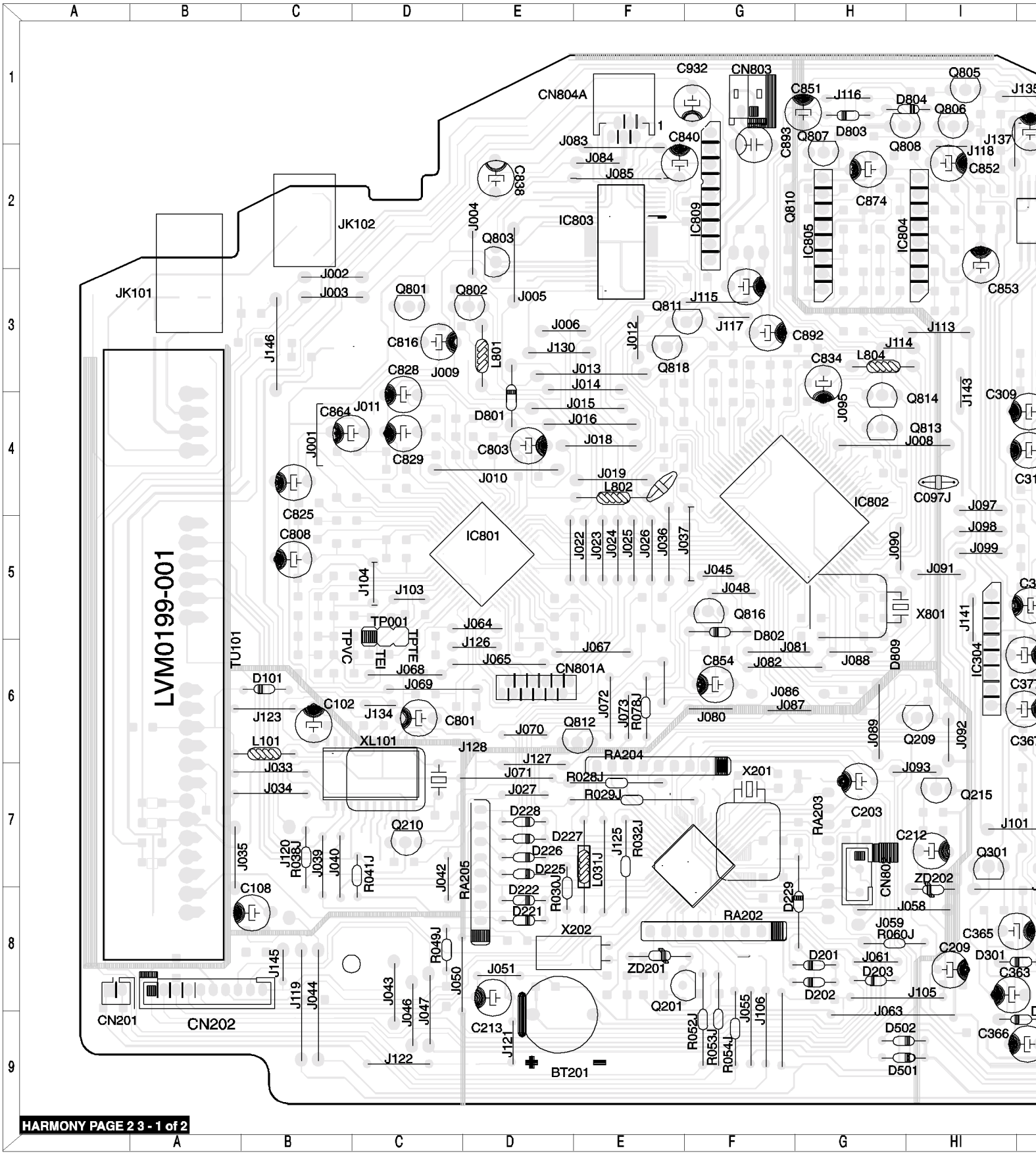
RMONY CONTROL PCB



HARMONY MAIN PCB COMPONENT SIDE

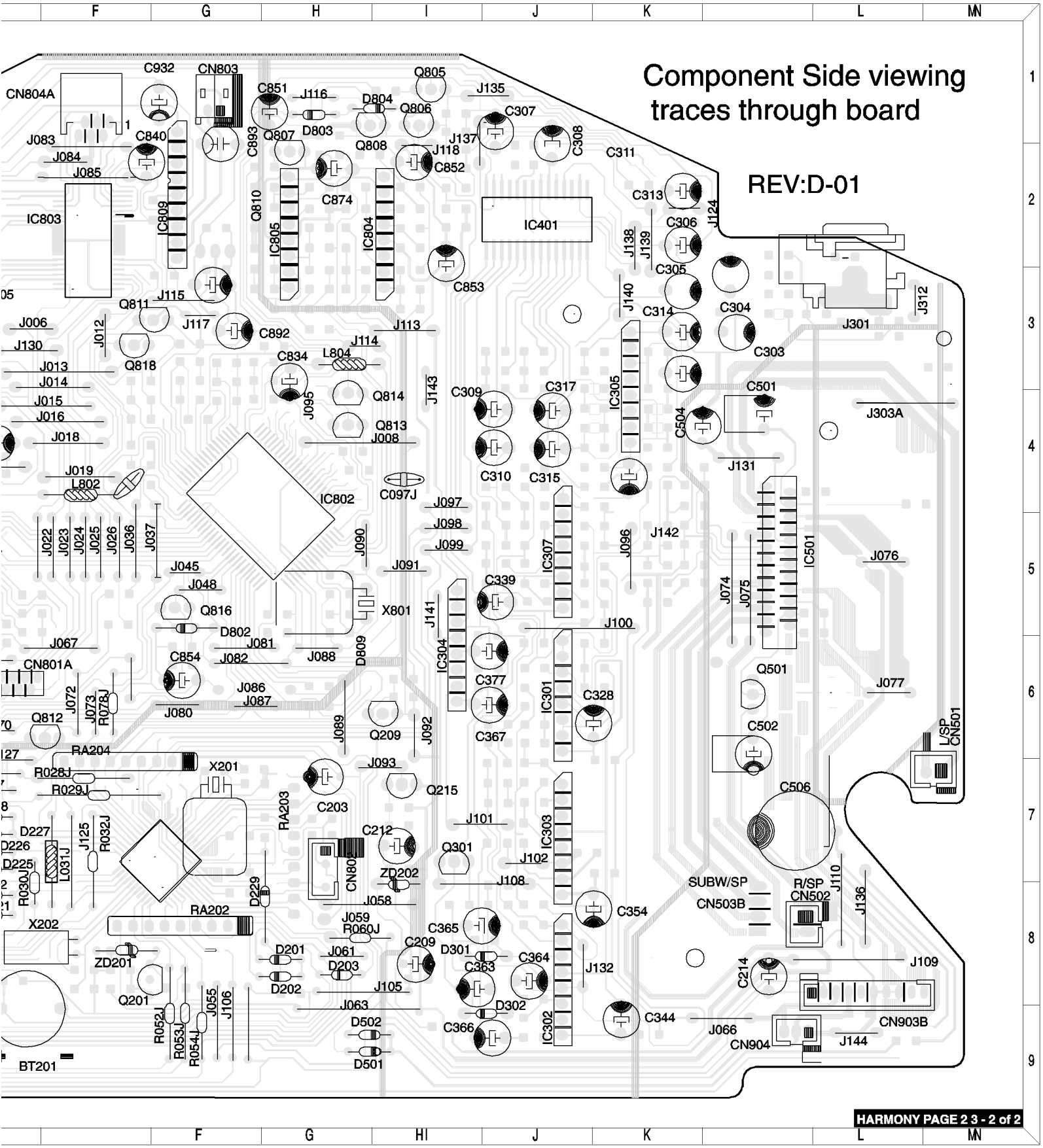


HARMONY MAIN PCB COMPONENT SIDE

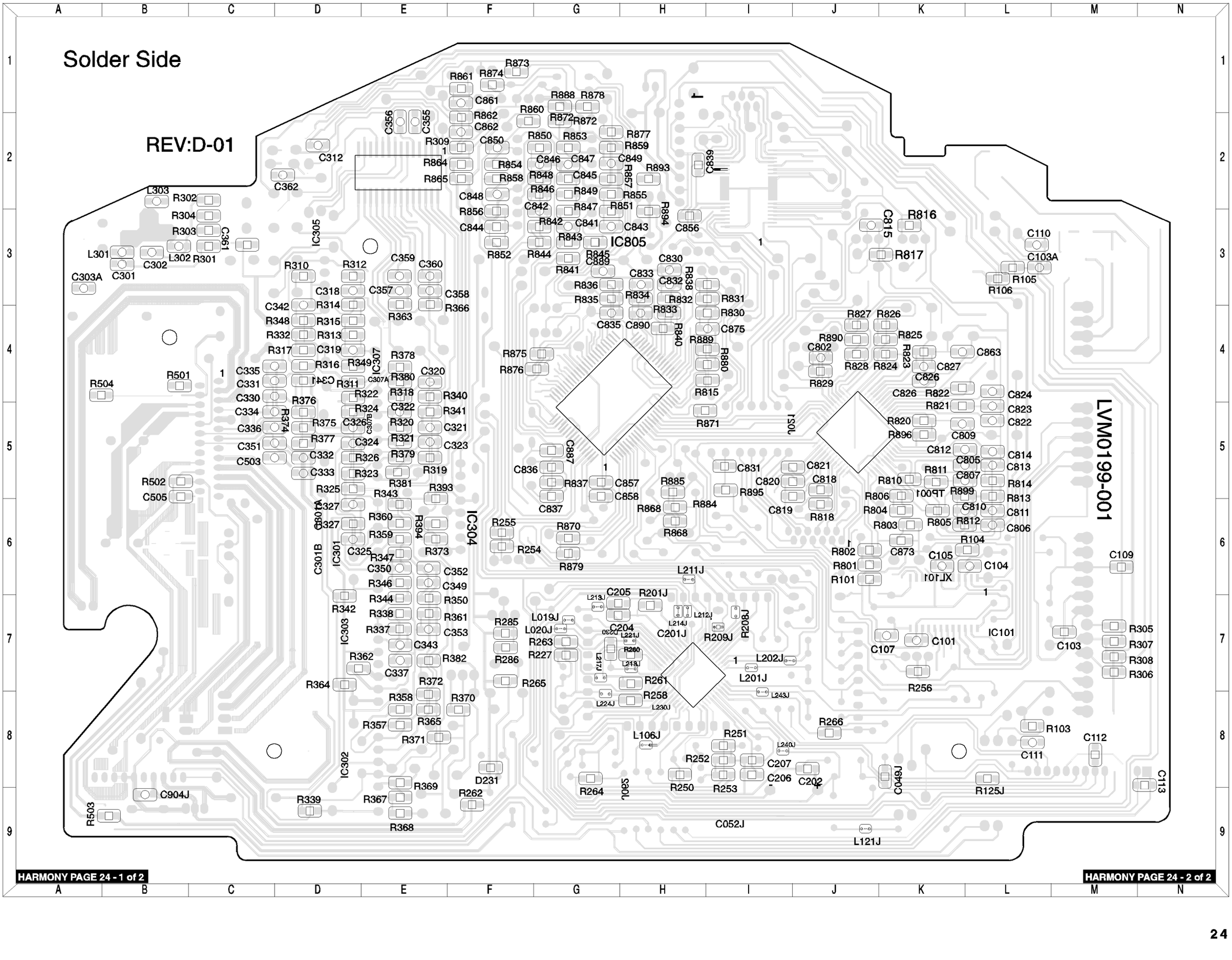


HARMONY PAGE 2 3 - 1 of 2

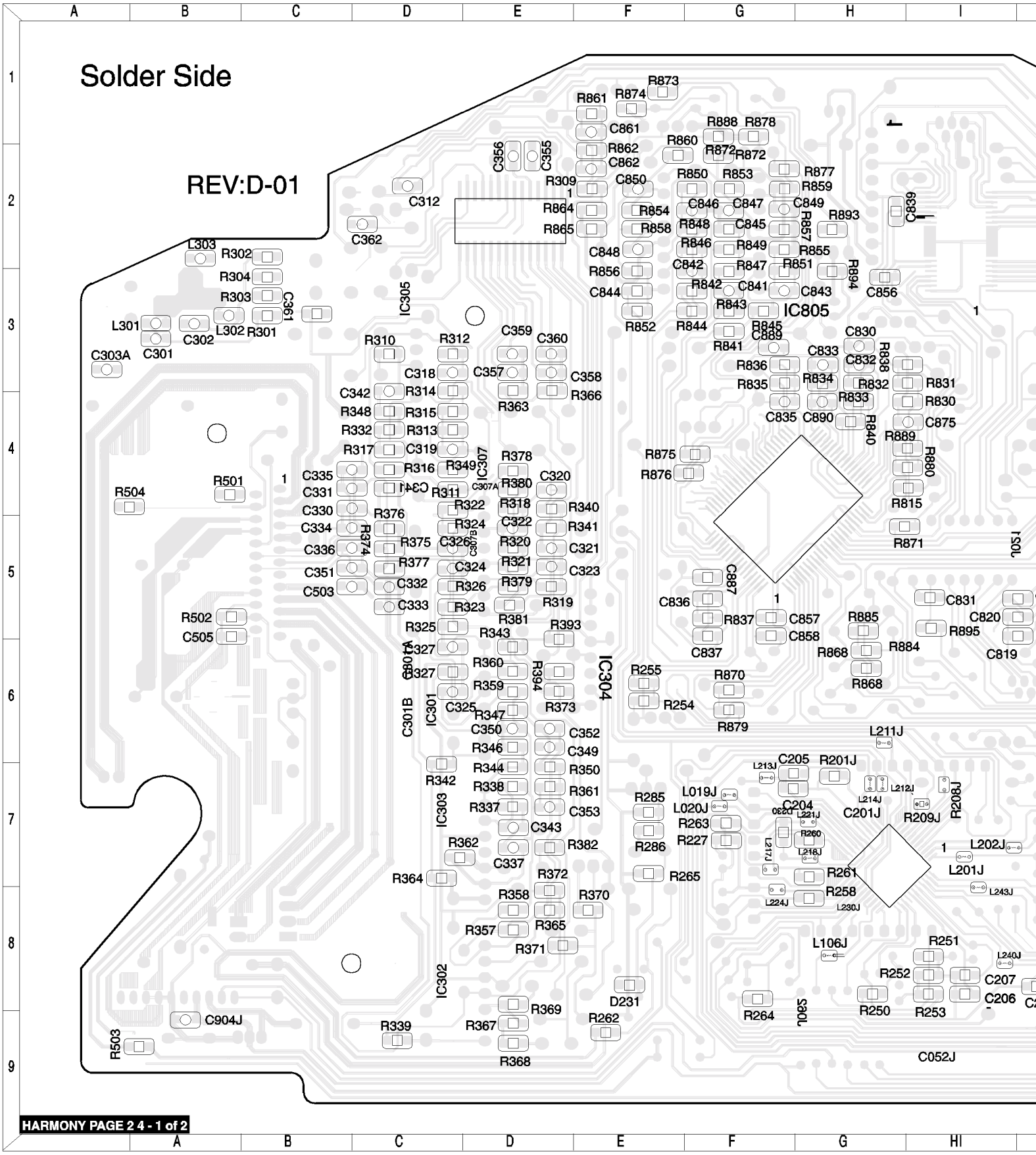
HARMONY MAIN PCB COMPONENT SIDE



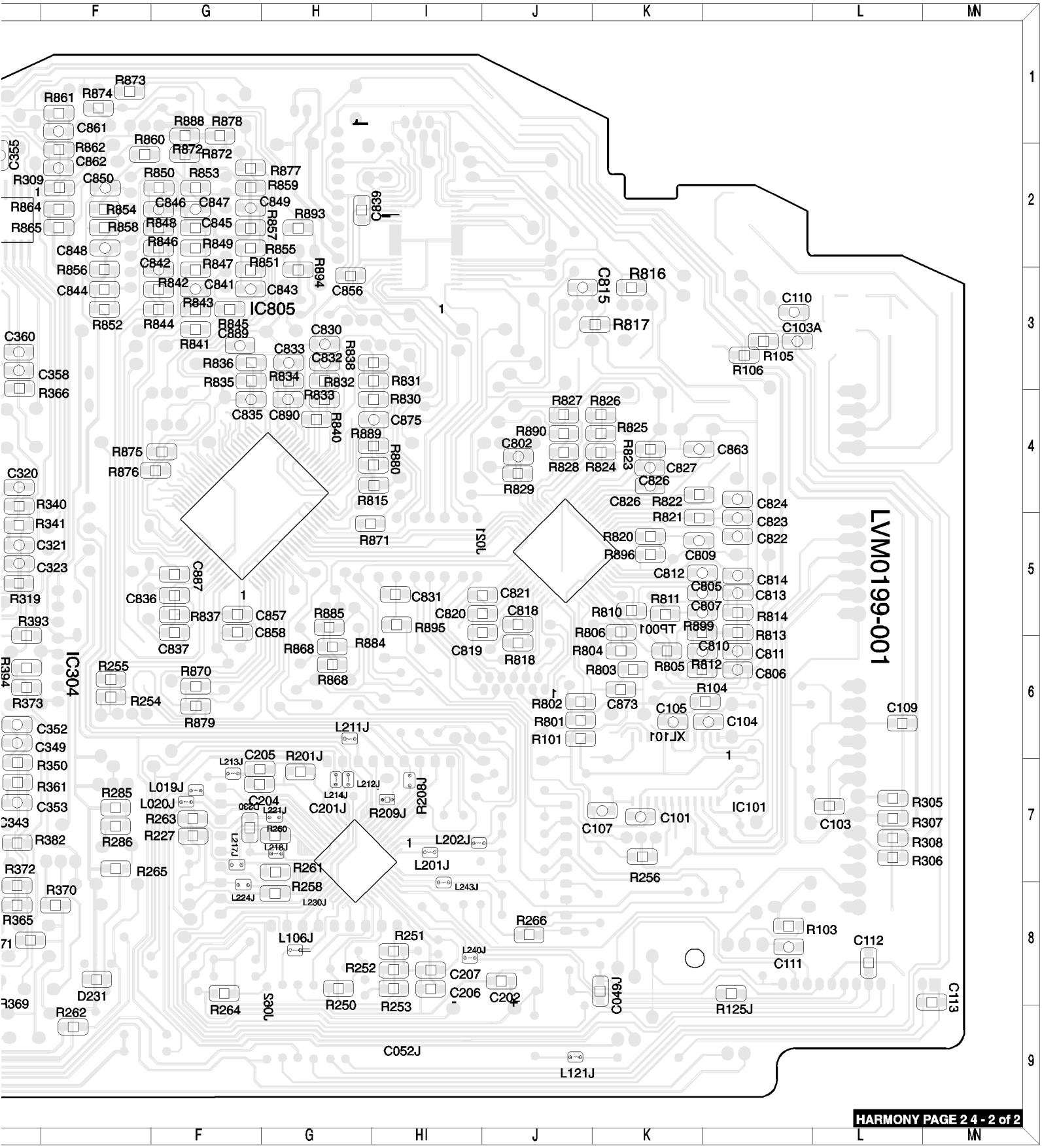
HARMONY MAIN PCB SOLDER SIDE



HARMONY MAIN PCB SOLDER SIDE



HARMONY MAIN PCB SOLDER SIDE



HARMONY ELECTRICAL PARTS LIST

Main PCB Assy

Capacitors

Ref. #	Part Number	Description	Qty
C052J	PLD3545-102	COND DISC 0.001UF 50V 10% Y5P LONG LEAD	1
C101A	PVD1335-220	COND DISC 22pF 50V 5% NPO	1
C108, C328, C339, C341, C344, C354, C364, C367, C803, C808, C816, C838, C840, C864, C874	PRA3952-101	COND ELECT 100uF 16V 20% MINI SIZE	15
C109, C110, C202, C332, C333, C503, C505, C802, C806, C813, C814, C822, C823, C824, C839, C856, C863, C875, C887, C889	PCV3955-104	CHIP CAP 0.1uF 50V 20% 1206 TYPE Y5V	20
C111, C215, C805, C807, C818, C820, C827, C830	PCV5645-103	CHIP CAP 0.01uF 50V 10% 1206 TYPE X7R	8
C201J	047X0788012	COND MONO 0.1 uF 50V 20% Z5U	1
C203, C212, C314, C315, C316, C317	PRA3955-109	COND ELECT 1uF 50V 20% MINI SIZE	6
C204, C205, C836, C837	PCV1035-300	CHIP CAP 30pF 50V 5% 1206 TYPE NPO	4
C206, C207	PCV1035-200	CHIP CAP 20pF 50V 5% 1206 TYPE NPO	2
C209	PRA3951-470	COND ELECT 47uF 10V 20% MINI SIZE	1
C213	PRA3951-101	COND ELECT 100uF 10V 20% MINI SIZE	1
C214, C363, C829, C851, C852	PRA3952-100	COND ELECT 10uF 16V 20% MINI SIZE	5
C301, C302, C334, C335, C336, C351	PCV5645-471	CHIP CAP 470pF 50V 10% 1206 TYPE X7R	6
C303, C304, C305, C306, C307, C308	PRA3955-229	COND ELECT 2.2uF 50V 20% MINI SIZE	6
C309, C310, C311, C313	PRA3952-220	COND ELECT 22uF 16V 20% MINI SIZE	4
C312, C833	PCV5645-221	CHIP CAP 220pF 50V 10% 1206 TYPE X7R	2
C318, C319	PCV1035-100	CHIP CAP 10pF 50V 5% 1206 TYPE NPO	2
C320, C321, C322, C323	PCV5635-223	CHIP CAP 0.022uF 50V 5% 1206 TYPE X7R	4
C324, C325, C353	PCV5635-333	CHIP CAP 0.033uF 50V 5% 1206 TYPE X7R	3
C326 C327	PCV5635-682	CHIP CAP 0.0068uF 50V 5% 1206 TYPE X7R	2
C330, C331	PCV5635-103	CHIP CAP 0.01uF 50V 5% 1206 TYPE X7R	2
C337 C343	PCV5635-683	CHIP CAP 0.068 uF 50V 5% 1206 TYPE X7R	2
C342, C357, C358, C359, C360, C361 C362	PCV3935-104	CHIP CAP 0.1uF 50V 5% 1206 TYPE Y5V	7
C350	PCV5635-823	CHIP CAP 0.082uF 50V 5% 1206 TYPE X7R	1
C352	PCV5635-473	CHIP CAP 0.047uF 50V 5% 1206 TYPE X7R	1
C355, C356, C810, C815, C849, C850, C861, C862	PCV5645-102	CHIP CAP 0.001uF 50V 10% 1206 TYPE X7R	8
C365	PRA3950-471	COND ELECT 470 uF 6.3V 20% MINI SIZE	1
C366	PRA3953-100	COND ELECT 10uF 25V 20% MINI SIZE	1
C377, C853, C891, C892, C932	PRA3951-221	COND ELECT 220uF 10V 20% MINI SIZE	5
C501, C502	PLA3955-109	COND ELECT 1uF 50V 20% LONG LEAD	2
C504, C801	PRA3952-470	COND ELECT 47uF 16V 20% MINI SIZE	2
C506	PVE3953-471	COND ELECT 470uF 25V 20% D=10	1
C809, C812	PCV5645-222	CHIP CAP 0.0022uF 50V 10% 1206 TYPE X7R	2
C811, C832	PCV5645-473	CHIP CAP 0.047uF 50V 10% 1206 TYPE X7R	2
C819, C821, C826	PCV5645-333	CHIP CAP 0.033uF 50V 10% 1206 TYPE X7R	3
C825	PRA3955-479	COND ELECT 4.7uF 50V 20% MINI SIZE	1
C828	PRA3955-108	COND ELECT 0.1uF 50V 20% MINI SIZE	1
C834, C854	PRA3955-478	COND ELECT 0.47uF 50V 20% MINI SIZE	2
C838A, C891A	PLD3545-103	COND DISC 0.01uF 50V 10% LONG LEAD	2
C841, C842	PCV1035-820	CHIP CAP 82pF 50V 5% 1206 TYPE NPO	2
C843, C844, C845, C846	PCV1035-390	CHIP CAP 39pF 50V 5% 1206 TYPE NPO	4
C847, C848	PCV5645-391	CHIP CAP 390pF 50V 10% 1206 TYPE X7R	2
C857, C858	PCV5645-201	CHIP CAP 200pF 50V 10% 1206 TYPE X7R	2
C873	PCV5645-223	CHIP CAP 0.022uF 50V 10% 1206 TYPE X7R	1
C890	PCV5645-152	CHIP CAP 0.0015uF 50V 10% 1206 TYPE X7R	1
C893	PRY3952-470	COND ELECT 47uF 16V 20% N.P. MINI SIZE (AI)	1
L802 TO GND (C876)	PRD3965-104	COND DISC 0.1uF 50V +80-20% Y5V/Z5V	1
Q201C TO GND	PRA3955-109	COND ELECT 1uF 50V 20% MINI SIZE	1
TUNER PACK	PRD1335-250	COND DISC 25pF 50V 5% NP0 TUNER PACK PARALLEL WITH C18	1

Connectors

Ref. #	Part Number	Description	Qty
CN201	CCN7879-022	CONNECTOR J.S.T. 2.0 mm PH B 2B-PH-K TOP SIZE	1
CN202, CN903B	CCN7879-030	CONNECTOR J.S.T. 2.0 mm PH B10B-PH-K TOP SIZE	2
CN501, CN502	CCN1500-018	CONNECTOR B 2B-XH-A 2 PIN POST BASE TOP	2

Ref. #	Part Number	Description	Qty
CN503B	CCN1500-015	CONNECTOR B 4B-XH-A 4 PIN POST BASE TOP	1
CN801A	CCN1233-012	CONNECTOR 12 PIN TOC-B12X-B1 TAIKO TOP BASE	1
CN802	CCN7879-024	CONNECTOR J.S.T. 2.0 mm PH B 4B-PH-K TOP SIZE	1
CN803	CCN7879-036	CONNECTOR 2 PIN PITCH=2.0 mm SIDE ENTRY TYPE	1
CN804A	CCN1233-L06	CONNECTOR 6 PIN TOC-A06X-B1 TAIKO SIDE BASE	1
CN904	CCN7879-023	CONNECTOR J.S.T. 2.0 mm PH B 3B-PH-K TOP SIZE	1
CON101	4999A-487	CON/WIRE 2 PIN 150MM #32 1007 BLK/RED	1

Diodes

D101, D201, D202, D203, D221, D222, D225, D226, D227, D228, D229, D301, D302, D501, D502, D801, D802, D803, D804, D809	RAD4148-001	DIODE SW 1N4148	20
D230, D231	RCD4148-001	DIODE SW LL4148 TELEFUNKEN SMT TYPE	2
ZD201	RAZ0859-065	DIODE ZENR 4.1-4.3V 0.5W HITACHI	1

Integrated Circuits

IC101	RCI727-001	LC72720NM *(RSDS 230V ONLY)*	1
IC201	RCI8747-012	IC 44 PIN CORE TC9704	1
IC301, IC302, IC303, IC304, IC305, IC307, IC804, IC805	RHI4558-002	IC 8 PIN NJM4558L Dual Op-Amp	8
IC401	RCI7313-001	IC 28 PIN TDA7313D DIGITAL AUDIO PROCESSOR	1
IC501	RHI7381-001	IC 25 PIN TDA7381 Power Amp	1
IC801	RCI1782-001	IC 48 PIN CXA1782BQ SONY RF AMP + S.S.P	1
IC802	RCI2508-001	IC 80 PIN CXD2508AQ SONY D.S.P + D.A.C.	1
IC803	RCI9258-001	IC 28 PIN KA9258D SAMSUNG POWER DRIVE IC	1
IC809	RHI6218-001	IC 9 PIN BA6218 MOTOR DRIVER IC	1

Resistors

L301, L302, L303	QCF0851-000	CHIP RES. 0 OHM JUMP WIRE 1206 SMT TYPE	3
RA202, RA203, RA204, RA205,	QVP0859-472	RES ARRAY 4.7K OHM 1/8W 5% 9 PIN	3
R029J, R030J, R032J, R038J, R041J, R053J, R054J, R060J, R078J	QAF0650-222	RESISTOR 2.2K OHM 1/6W 5% CF	9
R049J R052J	QAF0650-472	RESISTOR 4.7K OHM 1/6W 5% CF	2
R103, R817	QCF0851-100	CHIP RES. 10 OHM 1/8W 5% 1206 SMT TYPE	2
R125J, R227, R250, R266, R370, R503, R815, R878, R893	QCF0851-472	CHIP RES. 4.7K OHM 1/8W 5% 1206 SMT TYPE	9
R201J, R252, R255, R340, R341, R346, R347, R350, R362, R393, R394, R501, R504, R816, R833, R836, R840, R853, R854, R855, R856, R857, R858, R864, R865, R888, R890	QCF0851-103	CHIP RES. 10KOHM 1/8W 5% 1206 SMT TYPE	27
R208J, R209J	QCF6A53-222	CHIP RES. 2.2K OHM 1/16W 5% 0603 SMT TYPE	2
R251, R260, R367, R822, R870, R877, R879, R880	QCF0851-473	CHIP RES. 47K OHM 1/8W 5% 1206 SMT TYPE	8
R253, R332, R357, R358	QCF0851-752	CHIP RES. 7.5K OHM 1/8W 5% 1206 SMT TYPE	4
R254, R802, R803, R826, R868, R884, R885	QCF0851-333	CHIP RES. 33K OHM 1/8W 5% 1206 SMT TYPE	7
R256, R301, R302, R805, R830, R889, R895	QCF0851-223	CHIP RES. 22K OHM 1/8W 5% 1206 SMT TYPE	7
R258, R316, R317, R502, R810, R811, R824, R834, R835, R871, R875, R876	QCF0851-104	CHIP RES. 100K OHM 1/8W 5% 1206 SMT TYPE	12
R261, R861, R862	QCF0851-122	CHIP RES. 1.2K OHM 1/8W 5% 1206 SMT TYPE	3
R262	QCF0851-433	CHIP RES. 43K OHM 1/8W 5% 1206 SMT TYPE	1
R263, R369, R818	QCF0851-273	CHIP RES. 27K OHM 1/8W 5% 1206 SMT TYPE	3
R264, R812, R838	QCF0851-222	CHIP RES. 2.2K OHM 1/8W 5% 1206 SMT TYPE	3
R265, R801, R837, R873, R874, R894	QCF0851-102	CHIP RES. 1KOHM 1/8W 5%	6
R285, R305, R306, R324, R325, R820, R828	QCF0851-183	CHIP RES. 18K OHM 1/8W 5% 1206 SMT TYPE	7
R286, R359, R360	QCF0851-683	CHIP RES. 68K OHM 1/8W 5% 1206 SMT TYPE	3
R303, R304	QCF0851-393	CHIP RES. 39K OHM 1/8W 5% 1206 SMT TYPE	2
R307, R308	QCF0851-432	CHIP RES. 4.3K OHM 1/8W 5% 1206 SMT TYPE	2
R309, R339, R342, R343, R349, R364, R373, R872	QCF0851-101	CHIP RES. 100 OHM 1/8W 5% 1206 SMT TYPE	8
R310, R311	QCF0851-203	CHIP RES. 20K OHM 1/8W 5% 1206 SMT TYPE	2
R312, R313	QCF0851-184	CHIP RES. 180K OHM 1/8W 5% 1206 SMT TYPE	2
R314 R315	QCF0851-513	CHIP RES. 51K OHM 1/8W 5% 1206 SMT TYPE	2
R318, R319	QCF0851-133	CHIP RES. 13K OHM 1/8W 5% 1206 SMT TYPE	2
R320, R321	QCF0851-113	CHIP RES. 11K OHM 1/8W 5% 1206 SMT TYPE	2
R322, R323	QCF0851-242	CHIP RES. 2.4K OHM 1/8W 5% 1206 SMT TYPE	2

Ref. #	Part Number	Description	Qty
R326, R327, R382	QCF0851-471	CHIP RES. 470 OHM 1/8W 5% 1206 SMT TYPE	3
R337, R827	QCF0851-822	CHIP RES. 8.2K OHM 1/8W 5% 1206 SMT TYPE	2
R338	QCF0851-134	CHIP RES. 130K OHM 1/8W 5% 1206 SMT TYPE	1
R348	QCF0851-153	CHIP RES. 15K OHM 1/8W 5% 1206 SMT TYPE	1
R363, R366, R831, R896	QCF0851-562	CHIP RES. 5.6K OHM 1/8W 5%	4
R368	QCF0851-821	CHIP RES. 820 OHM 1/8W 5% 1206 SMT TYPE	1
R371 R804	QCF0851-105	CHIP RES. 1M OHM 1/8W 5% 1206 SMT TYPE	2
R378, R379, R380,	QCF0851-561	CHIP RES. 560 OHM 1/8W 5% 1206 SMT TYPE	3
R806	QCF0851-123	CHIP RES. 12K OHM 1/8W 5% 1206 SMT TYPE	1
R813	QCF0851-334	CHIP RES. 330K OHM 1/8W 5% 1206 SMT TYPE	1
R814	QCF0851-474	CHIP RES. 470K OHM 1/8W 5% 1206 SMT TYPE	1
R821	QCF0851-824	CHIP RES. 820K OHM 1/8W 5% 1206 SMT TYPE	1
R823	QCF0851-514	CHIP RES. 510K OHM 1/8W 5% 1206 SMT TYPE	1
R825	QCF0851-823	CHIP RES. 82K OHM 1/8W 5% 1206 SMT TYPE	1
R829	QCF0851-124	CHIP RES. 120K OHM 1/8W 5% 1206 SMT TYPE	1
R832, R859, R860	QCF0851-332	CHIP RES. 3.3K OHM 1/8W 5% 1206 SMT TYPE	3
R841, R842, R843, R844	QCF0851-753	CHIP RES. 75K OHM 1/8W 5% 1206 SMT TYPE	4
R845, R846, R847, R848	QCF0851-363	CHIP RES. 36K OHM 1/8W 5% 1206 SMT TYPE	4
R849, R850, R851, R852	QCF0851-563	CHIP RES. 56K OHM 1/8W 5% 1206 SMT TYPE	4
R899	QCF0851-682	CHIP RES. 6.8K OHM 1/8W 5% 1206 SMT TYPE	1

Transistors

Q209, Q210, Q215, Q301, Q501, Q805, Q806, Q807, Q811, Q812, Q816	RAN0945-001	XISTR NPN 2SC945P NEC	11
Q201, Q808	RAP0733-001	XISTR PNP "2SA733Q,P NEC AI"	2
Q801, Q802, Q803, Q813, Q814, Q818	RAP0952-001	XISTR PNP 2SA952 NEC	6
Q810	RHP0772-001	XISTR PNP 2SB772P/Q NEC	1

Miscellaneous

BT201	FBE0030-001	LI BATTERY LITHIUM RECHARG. VL1220/IHF 7mAH	1
HEAT SINK	GAL0074-002	(A) AL NATURAL COLOR	1
HEAT SINK	GAL0087-002	(B) AL NATURAL COLOR	1
JK101	CJF0002-001	ANT JACK FM ANT JACK (F) TYPE	1
JK102	CJM9380-038	PHONE JACK 3.5 DIA	1

Ref. #	Part Number	Description	Qty
J301	CTP0005-001	JACK RCA 2P JACK JYE TAI(RJ-1020-009)	1
L801, L802, L804	SAC7414-100	CHOKE 10uH AI	3
TU101	WTP0002-002	TUNER PACK FAE203-A02 (FCC)	1
TUNER PACK	JQC6070-450	CRYSTAL 4.5000 MHZ HC-49/U TUNER PACK	1
X201	JQC607A-419	CRYSTAL 4.194304 MHz (TXC)	1
X202	JQC6070-327	CRYSTAL 32.768 KHZ C-001R	1
X801	JQC6070-338	CRYSTAL 33.8688 MHZ HC-49/U	1
	GSE0175-001	IC BRACKET SECC t1.0mm IC501	1
	GTN0033-001	HEAT SINK TIN HEAT SINK TO TUNER PACK	1
	GTN0037-001	COVER TUNER COVER A, TUNER PACK-1	1
	GTN0038-002	TUN COVER, TUNER COVER B HARMONY (NEW) H/SINK TO PCB-2	1
	H120301-106	SCREW T3.0x0.5pxL6.0 mm PAN HEAD NICKEL H/SINK(F) TO H/SINK(B)-3	2
	H120301-308	SCREW T3.0x0.5pxL8.0 mm PAN HEAD BLACK IC TO H/SINK-2	3
	H120301-314	SCREW T3.0x0.5pxL14.0mm PAN HEAD BLACK	2

CONTROL PCB ASSY

Capacitors

C210, C211	PRD3545-102	COND DISC 1000pF 50V 10% Y5P	2
C271, C272	PRA3952-101	COND ELECT 100 uF 16V 20% MINI SIZE	2
C273, C274	PAU3963-104	COND TUBUL 0.1 uF 25V +80-20% F(Y5V)	2
C275	PAU3545-101	COND TUBUL 100 pF 50V 10% B(Y5P)	1
C276	PRA3952-220	COND ELECT 22 uF 16V 20% MINI SIZE	1

Diodes

D206, D207, D271	RAD4148-001	DIODE SW 1N4148	3
ZD205	RAZ0859-068	DIODE ZENR 5.0-5.2V 0.5W HITACHI HZ5C-2	1

Integrated Circuit

IC202	RCI5824-001	IC 64 PIN LC75824 SANYO 204 SEG LCD DRIVER	1

Resistors

R202, R218, R283	QAF0650-471	RESISTOR 470 OHM 1/6W 5% CF	3
R203, R204, R219, R220	QAF0650-391	RESISTOR 390 OHM 1/6W 5% CF	4
R205, R221	QAF0650-561	RESISTOR 560 OHM 1/6W 5% CF	2
R206	QAF0650-681	RESISTOR 680 OHM 1/6W 5% CF	1

Ref. #	Part Number	Description	Qty
R207	QAF0650-751	RESISTOR 750 OHM 1/6W 5% CF	1
R208	QAF0650-821	RESISTOR 820 OHM 1/6W 5% CF	1
R209	QAF0650-122	RESISTOR 1.2K OHM 1/6W 5% CF	1
R210	QAF0650-152	RESISTOR 1.5K OHM 1/6W 5% CF	1
R211	QAF0650-202	RESISTOR 2K OHM 1/6W 5% CF	1
R212	QAF0650-302	RESISTOR 3K OHM 1/6W 5% CF	1
R213, R280, R282	QAF0650-472	RESISTOR 4.7K OHM 1/6W 5% CF	3
R214	QAF0650-822	RESISTOR 8.2K OHM 1/6W 5% CF	1
R222, R223, R224	QAF0650-103	RESISTOR 10K OHM 1/6W 5% CF	3
R225	QAF0650-399	RESISTOR 3.9 OHM 1/6W 5% CF	1
R226	QAF0650-222	RESISTOR 2.2K OHM 1/6W 5% CF	1
R271	QAF0650-100	RESISTOR 10 OHM 1/6W 5% CF	1
R272	QAF0650-470	RESISTOR 47 OHM 1/6W 5% CF	1
R273	QAF0650-104	RESISTOR 100K OHM 1/6W 5% CF	1
R276	QAF0650-564	RESISTOR 560K OHM 1/6W 5% CF	1
R277, R278, R279	QAF0650-102	RESISTOR 1K OHM 1/6W 5% CF	3
R281	QAF0450-300	RESISTOR 30 OHM 1/4W 5% CF	1
VR201	MSR1624-202	R-ENCODER EC16B24202 ALPS 16 mm WITH DETENT	1

Transistors

Q202, Q203, Q204, Q207	RAN0945-001	XISTR NPN 2SC945P NEC	4
Q205	RAP0952-001	XISTR PNP 2SA952 NEC	1
Q208	RAN2001-001	XISTR NPN 2SC2001L NEC	1

Miscellaneous

TO LCD HOLDER	IVS0009-002	FELT 82.0x11.0xT0.5 mm BACK WITH ADHESIVE	1
TO LCD HOLDER	IVS0009-003	FELT 23.0x11.0xT0.5 mm BACK WITH ADHESIVE	2
LCD HOLDER	GFI0013-003	FIBER PLT 25X2.5X1.0mm	2
	GTN0041-001	LCD HOLDER	1
LP201	KDG0024-002	LED ARRAY	1
D204	KEM0002-003	LED 3 DIA LED TWO COLOR GREEN/YELLOW CHANGE	1
DSP201	KLD0027-002	DISPLAY LC FT-068PAT PICVUE HARMONY (NEW)	1
SN201	RHO0638-009	IRT SENSOR PIC-28043TE2 L=16mm KODENSHI KOT62104344	1
	500331298B3	CON/WIRE 3 COND 120mm P=2mm 26 AWG, RB205 TO SNOOZE / ALARM CONTROL PCB CN205	1
	500331698B3	CON/WIRE 3 COND 160mm P=2mm RIBBON UL2468 26 GA 1, RB904 TO MAIN PCB CN904	
	5003A1698B3	CON/WIRE 10 COND 160mm P=2mm RIBBON UL2468 26 GA 1, RB202 TO MAIN PCB CN202	
TA203,TA204, TA205, TA206,TA207,TA208, TA209, TA210, TA211, TA212, TA213, TA214, TA217, TA218, TA219, TA220	MAT2029-001	Al TACT SW 5.0mm 160 gf ALPS SKHVBE3520	16
	APE0200-021	R-ENCODER PCB	1
	APE0200-031	ALARM ASSEMBLY PCB	1
	APE0200-042	AC-DC POWER ASSEMBLY PCB	1

Alarm Assy

CN205	CCN7879-037	CONNECTOR 3 PIN PITCH=2.0mm SIDE ENTRY TYPE	1
TA201, TA202, TA221	MAT2029-001	Al TACT SW 5.0mm 160gf ALPS SKHVBE3520	3

SW PCB ASSY

CN101	CCN7879-036	CONNECTOR 2 PIN PITCH=2.0 mm SIDE ENTRY TYPE	1
SW101	MSS9477-034	SW SLIDE	1
R105	QAF0650-912	RESISTOR 9.1K OHM 1/6W 5% CF	1

AC INPUT ASSY

Connectors

CN503, CN503A	CCN1500-015	CONNECTOR B 4B-XH-A 4 PIN POST BASE TOP	2
CN901	CCN3962-924	CONNECTOR 4 PIN SIDE BASE REMOVED PIN 2 & 3	1
CN902	CCN3962-002	CONNECTOR 2 PIN CL3962WVO P=3. 96mm POST BASE TOP	1
CN903A	CCN7879-030	CONNECTOR J.S.T. 2.0mm PH B10B-PH-K TOP SIZE	1
CN905B	CCN3962-004	CONNECTOR 4 PIN CL3962WVO PITCH=3.96mm	1
CN907	CCN3962-003	CONNECTOR 3 PIN CL3962WVO	1

Capacitors

C901	PRD3965-104	COND DISC 0.1uF 50V +80-20% Y5V/Z5V	1
C902	PVS0003-103	COND SAFE 0.01uF 250V 20% UL/CSA/VDE/SEMKO RB905A TO POWER PCB CN905B	1
C904	PVE3954-472	COND ELECT 4700uF 35V 20%	1
C905	PVE3953-102	ELECT 1000uF 25V 20% D=10	1
C924, C929, C930	PRD3965-104	COND DISC 0.1uF 50V +80-20% Y5V/Z5V	3
C926	PRE3952-471	COND ELECT 470uF 16V 20%	1
C927, C928	PRD3545-221	COND DISC 220pF 50V 10% Y5P II D=5	2
C931	PRE3951-221	COND ELECT 220uF 10V 20%	1
C933	PRE3952-221	COND ELECT 220uF 16V 20%	1
C934	PRE3955-109	COND ELECT 1uF 50V 20%	1
C935, C936, C937, C938	PEP2635-224	COND METAL .22uF 50V 5% TAPPING MINI SIZE T=mm	4

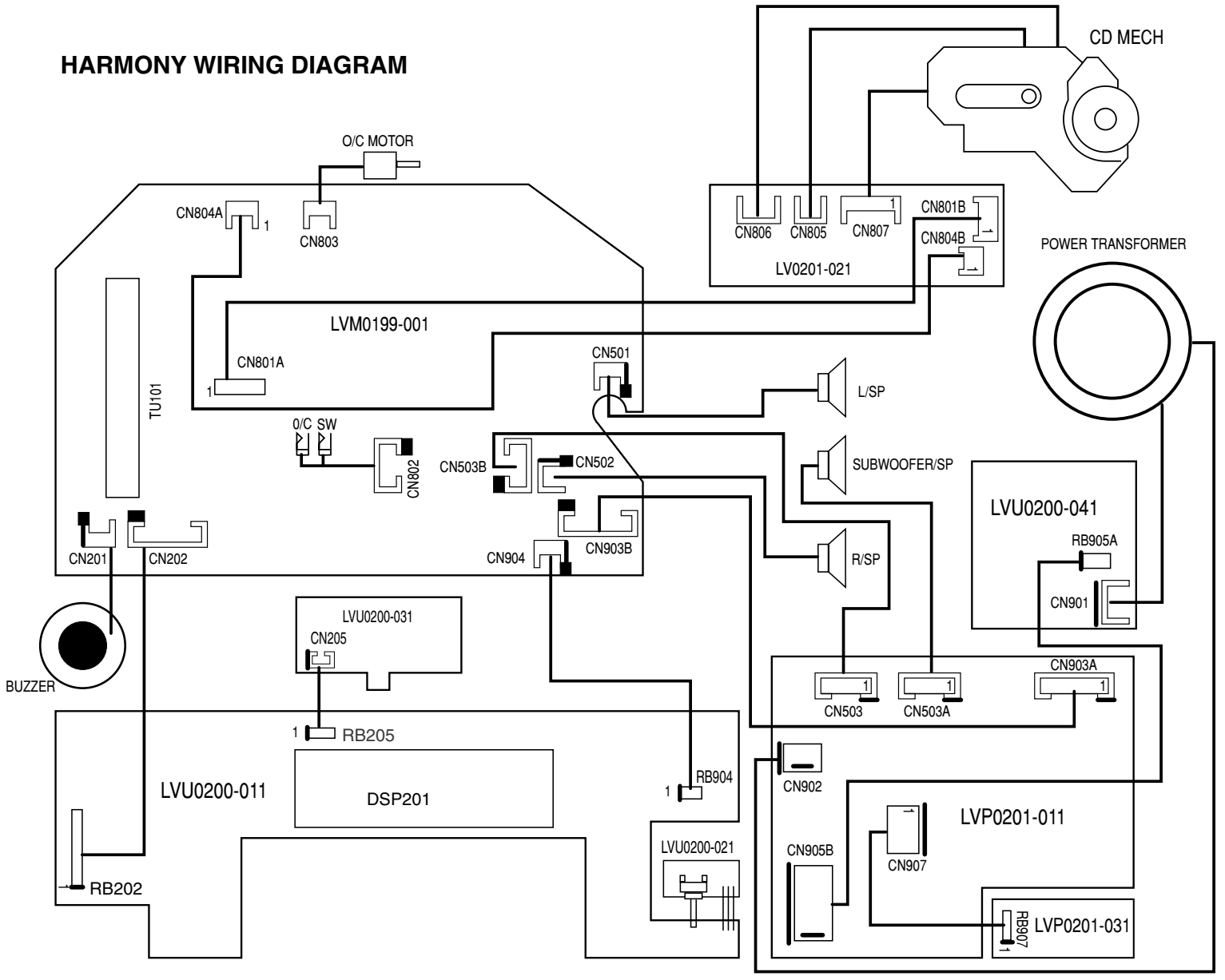
Ref. #	Part Number	Description	Qty
Diodes			
D901	RHD0802-001	RECTIFIER KBU8B 8A 100V	1
D915	RHD5401-001	RECTIFIER 1N5401 3.0 A 70 VRMS	1
D916	RAD4148-001	DIODE SW 1N4148	1
D917, D918	RAD4001-001	RECTIFIER 1N4001 1A 35VRMS	2
Integrated Circuits			
IC901	RHI7808-001	IC 3 PIN REGULATOR 8V 1A 7808	1
IC903	RHI7806-001	IC 3 PIN MC7806ACT +6V REGULATOR	1
IC904	RHI4558-001	IC 8 PIN JRC4558D JRC OP AMP	1
Resistors			
R901, R910	QAF0650-473	RESISTOR 47K OHM 1/6W 5% CF	2
R902	QAF0650-222	RESISTOR 2.2K OHM 1/6W 5% CF	1
R903	QAS0200-475	RESISTOR 4.7M OHM 1/2W 10% UL STATIC DISCHARGE	1
R904	QAF0250-681	RESISTOR 680 OHM 1/2W 5% CF	1
R905, R914	QAF0650-103	RESISTOR 10K OHM 1/6W 5% CF	2
R906 R921	QAF0650-183	RESISTOR 18K OHM 1/6W 5% CF	2
R907	QAF0650-822	RESISTOR 8.2K OHM 1/6W 5% CF	1
R908, R915	QAF0650-912	RESISTOR 9.1K OHM 1/6W 5% CF	2
R911	QAF0650-182	RESISTOR 1.8K OHM 1/6W 5% CF	1
R912, R913	QAF0650-471	RESISTOR 470 OHM 1/6W 5% CF	2
R918	QAF0650-103	RESISTOR 10K OHM 1/6W 5% CF	1
R920	QAF0650-479	RESISTOR 4.7 OHM 1/6W 5% CF	1
Transistors			
Q901	RHM5006-001	MOS FET RFP50N06 50A 60V HARRIS	1
Q902, Q906	RAN0945-001	XISTR NPN 2SC945P NEC	2
Q904	RHP0042-001	XISTR PNP TIP42C	1
Miscellaneous			
F901	KSA2160-003	FUSE 1.6A 250V 5x20 mm W/UL. CSA. T MARKING	1
F902, F903	KSA2800-001	FUSE 8A 250V	2
F901, F902	CFC2557-001	FUSE CLIP 5 D 5 X 20 FUSE	4
F903	CFC2557-001	FUSE CLIP 5 D 5 X 20 FUSE	2
JK901	CPP0003-002	AC/DC INLT HSC1561-01-0101	1
RB907	4999A-395	CON/WIRE 3 COND 220mm P:3.96mm 22AWG	1
	BNP0067-001	PVC PLATE 60 X 46mm	1
	BRB0013-001	RUBBER, SOCKET RUBBER AC/DC POWER PCB,	1
	GSE0186-001	BRACKET, SOCKET BRACKET AC/DC POWER PCB,	1
	4999A-379	CON/WIRE 4 COND 280mm P=3.96mm, UL1007 22 GA	1

Ref. #	Part Number	Description	Qty
	APE0230-021	CONN. ASSY CD CONNECTOR PCB ASSY	1
	APE0230-031	POWER ASSY POWER 1 PCB ASSY	1
	GAL0097-001	HEAT SINK	1
	GFI0012-001	WASHER FIB, FIBER WASHER 50 X 12 X T1.0mm TO HEAT SINK	2
	H120301-306	SCREW T3.0x0.5pxL6.0 mm PAN HEAD BLACK Q901 TO HEAT SINK	1
	GAL0091-001	HEAT SINK AL T2.0mm For IC901 & IC903	1
	H100301-306	SCREW T3.0xL6.0mm BLACK IC901 & IC903 TO HEAT SINK	2

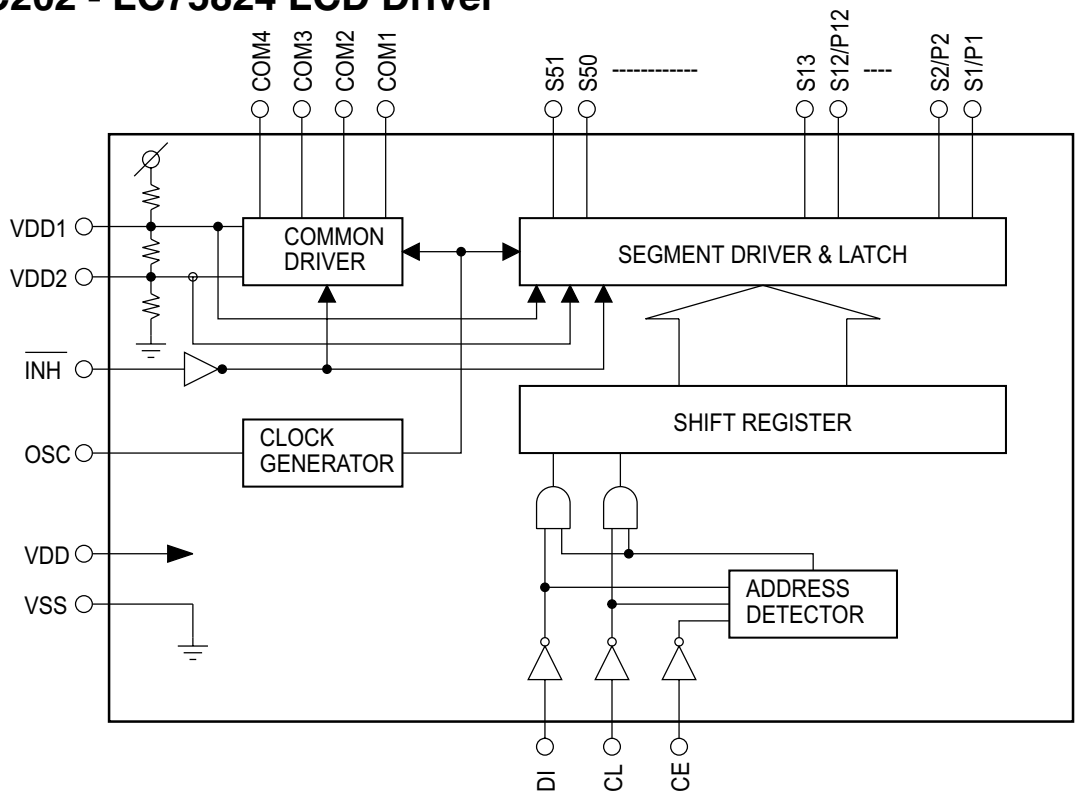
CONN. ASSY
CD CONNECTOR PCB ASSY

CN801B	CCN1233-L12	CONNECTOR 12 PIN TOC-A12X-B1 TAIKO SIDE BASE	1
CN804B	CCN1233-L06	CONNECTOR 6 PIN TOC-A06X-B1 TAIKO SIDE BASE	1
CN805	CCN7879-036	CONNECTOR 2 PIN PITCH=2.0mm SIDE ENTRY TYPE	1
CN806	CCN7879-038	CONNECTOR 4 PIN PITCH=2.0mm SIDE ENTRY TYPE	1
CN807	CCN1233-L16	CONNECTOR 16 PIN TOC-A16X-B1 TAIKO SIDE BASE	1

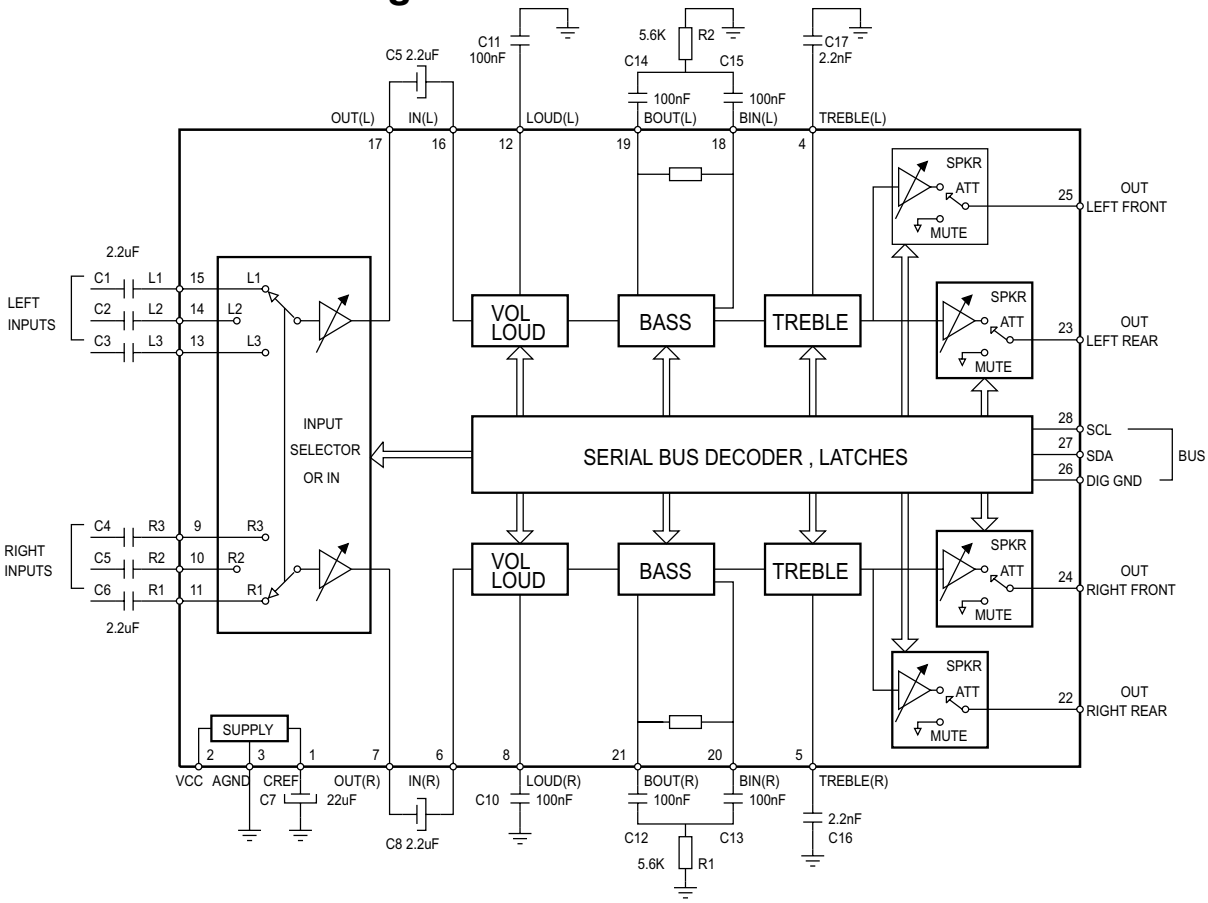
HARMONY WIRING DIAGRAM



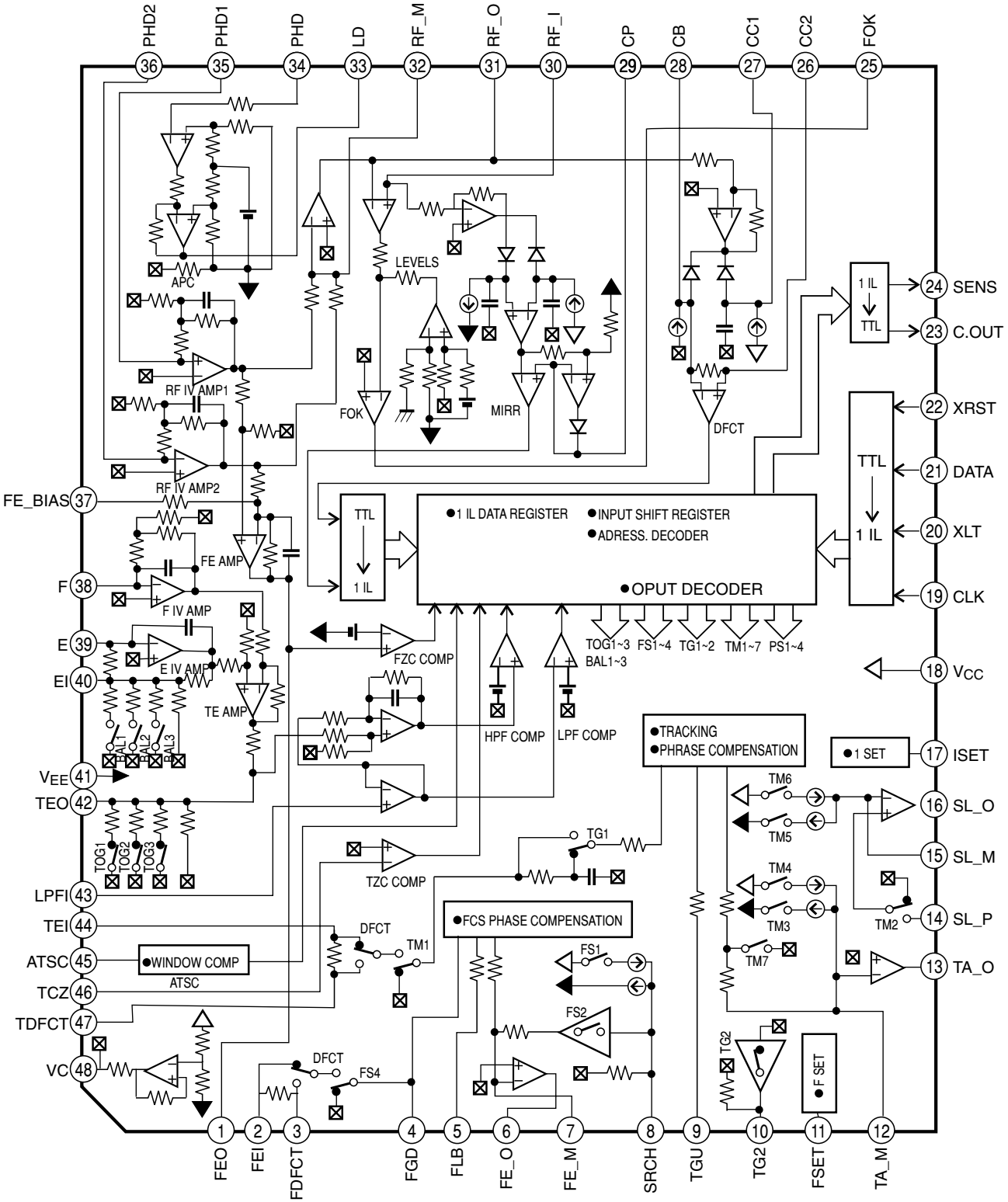
IC202 - LC75824 LCD Driver



IC401 - TDA7313 Digital Audio Processor

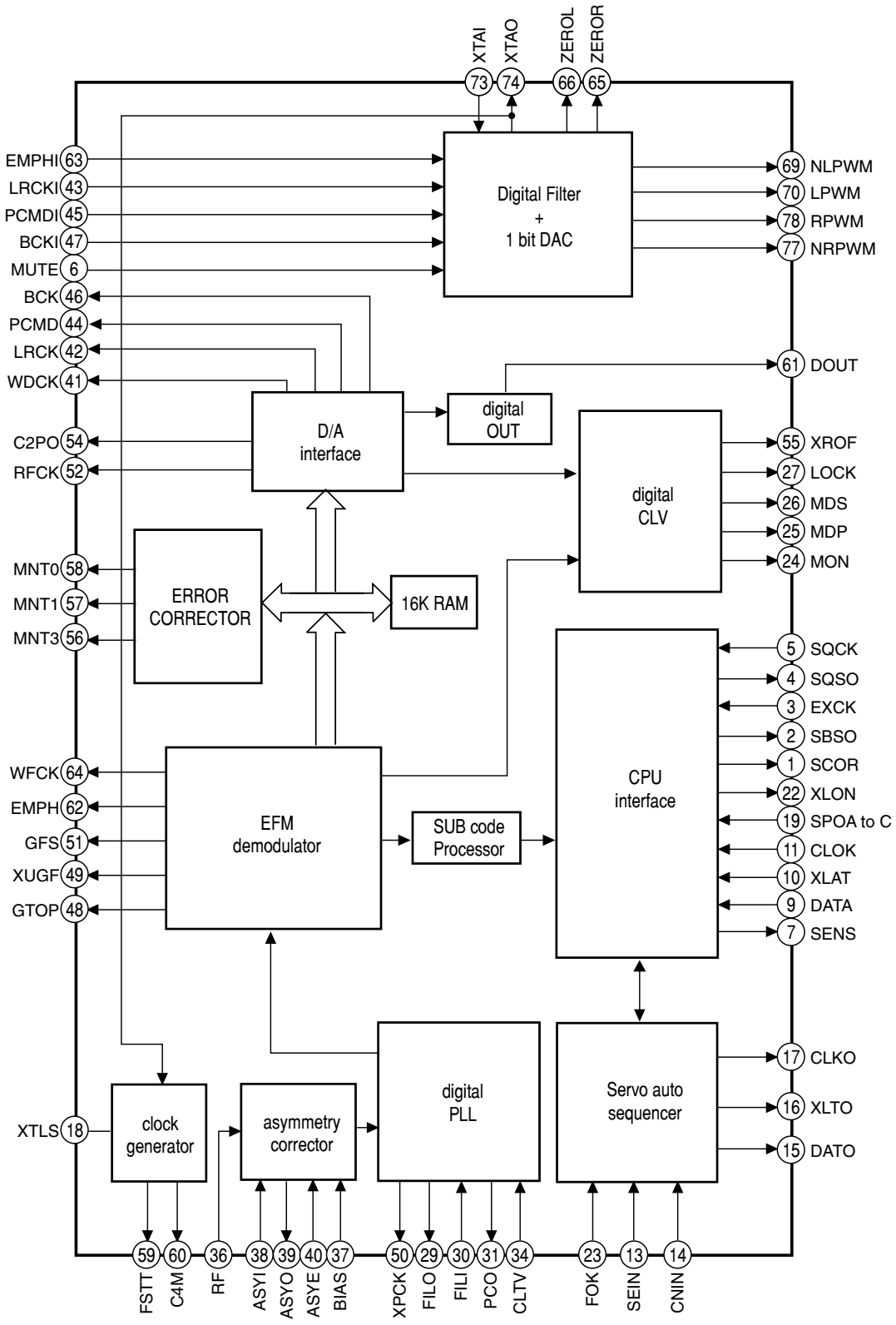


IC801 - CXA1782BQ/BR RF Amp + SS Processor



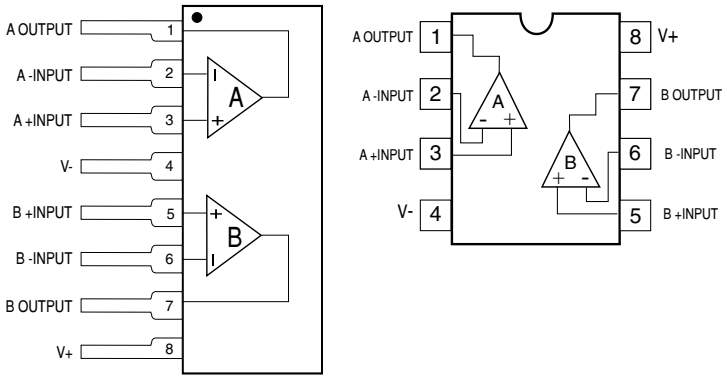
* The switch state in Block Diagram is for initial resetting.
* TG1 switch turns to Oside and TG2 switch is left open when TG1 and TG2 (address 1 : D3) is 1.

IC802 - CXD2508AQ/AR DSP + DAC

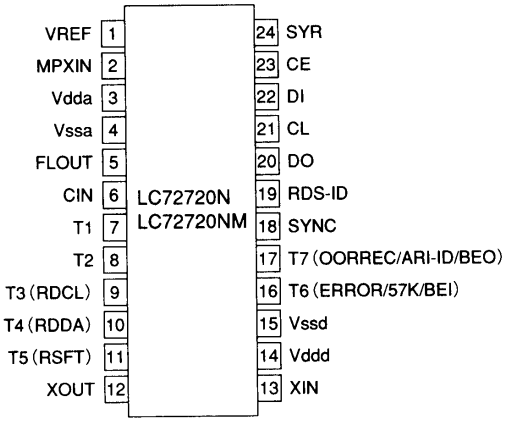


NOTE: The pin numbers are for QFP. Refer to the Pin Description for those of LQFP.

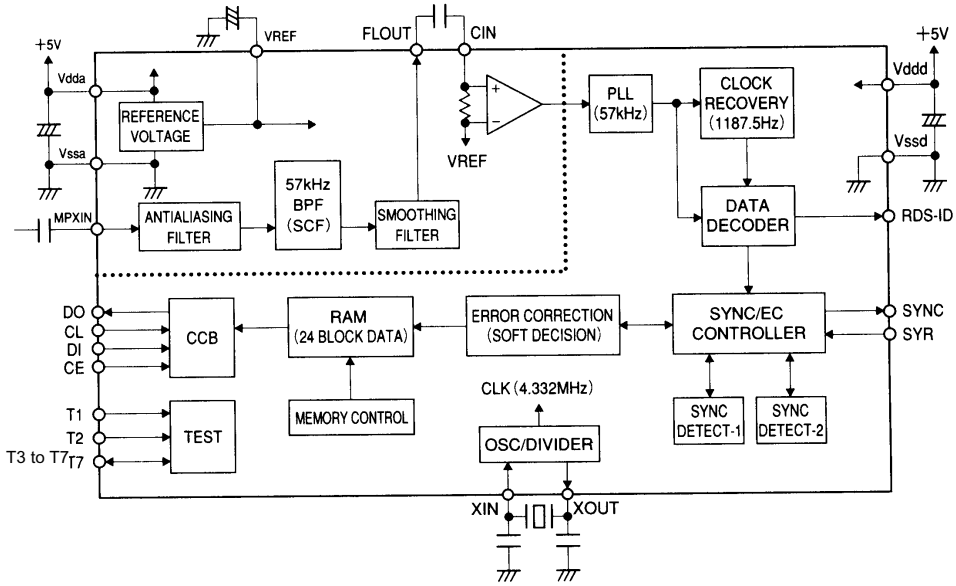
IC301-305, 307, 804, 805, 904
NJM4558L - Dual Op-Amp



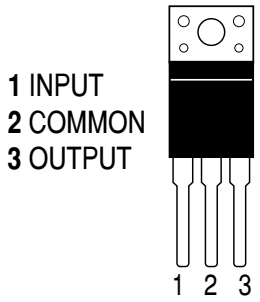
IC101 - LC72720NM
(*RSDS 230V ONLY*)



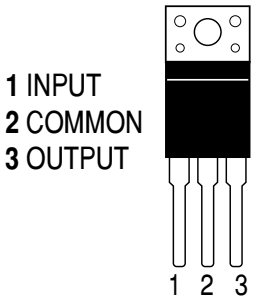
IC101 - LC72720NM (*RSDS 230V ONLY*)



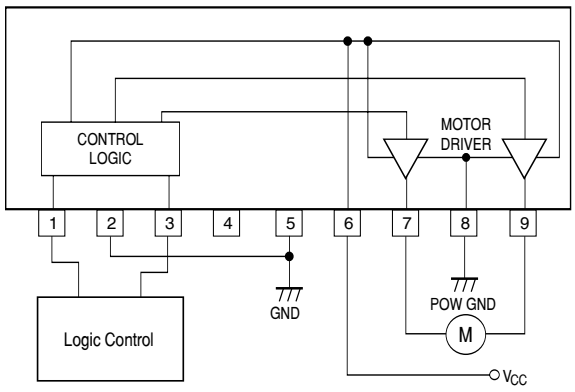
+6V REGULATOR
IC903 - MC7806



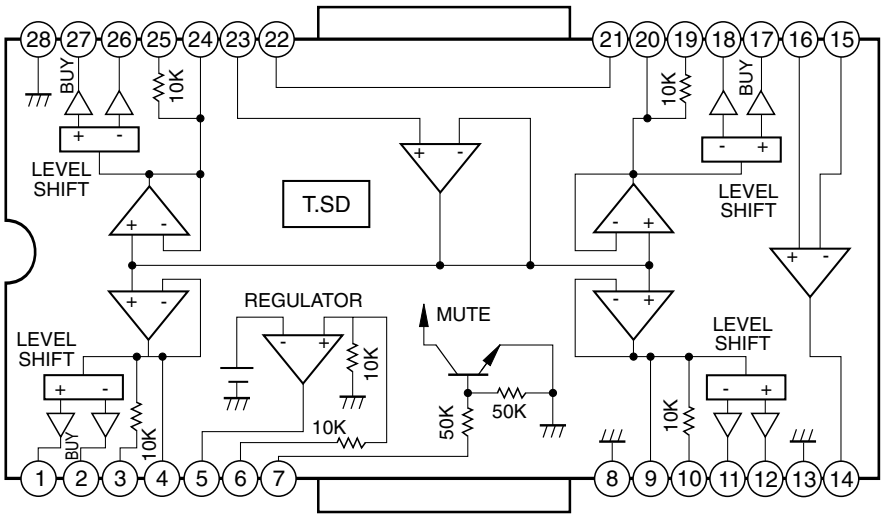
+8V REGULATOR
IC901 - MC7808



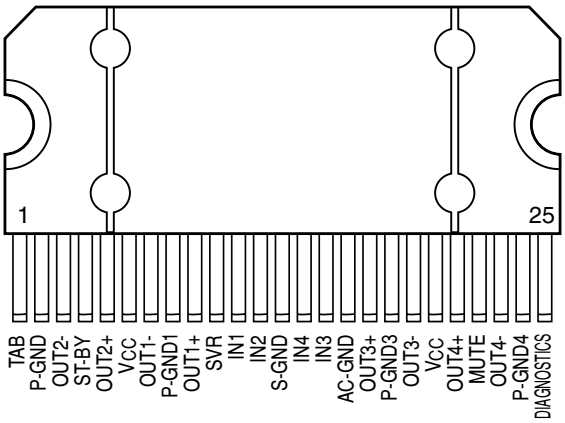
IC809 - BA6218 - Motor Driver

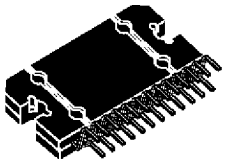


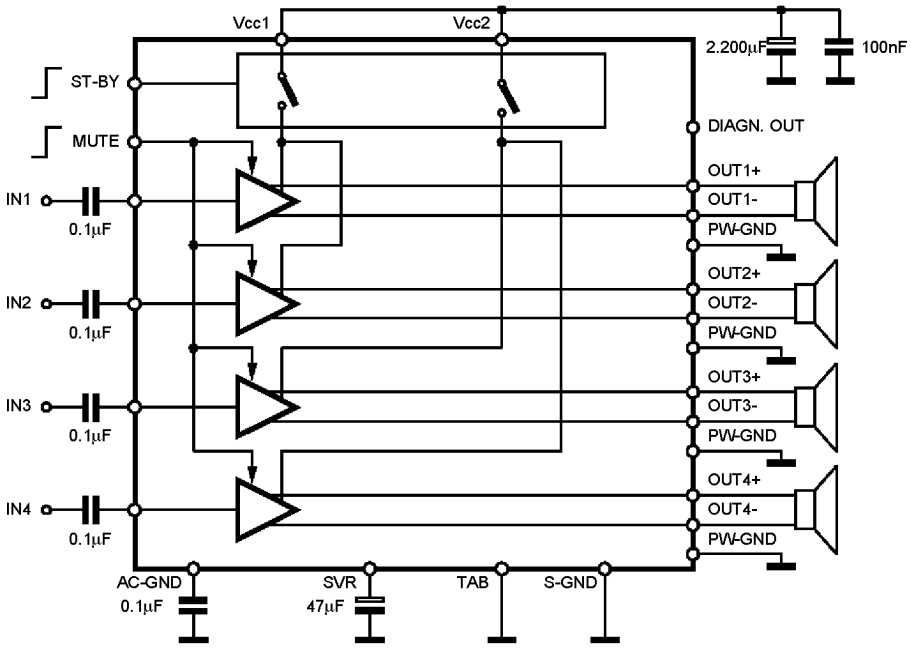
IC803 - KA9258D Power Driver



IC501 - TDA7381 Quad Bridge Amp



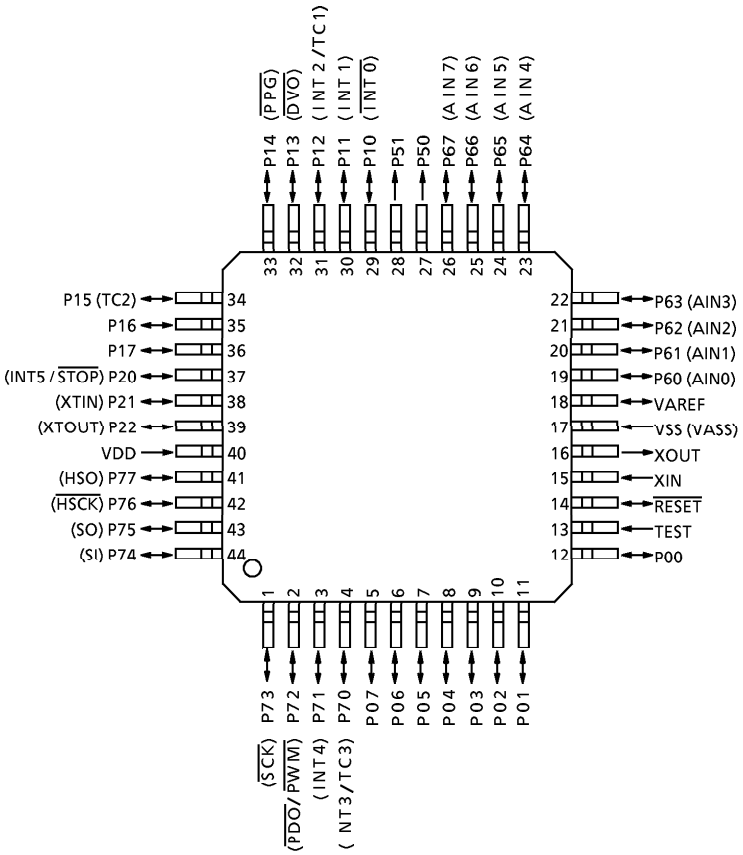




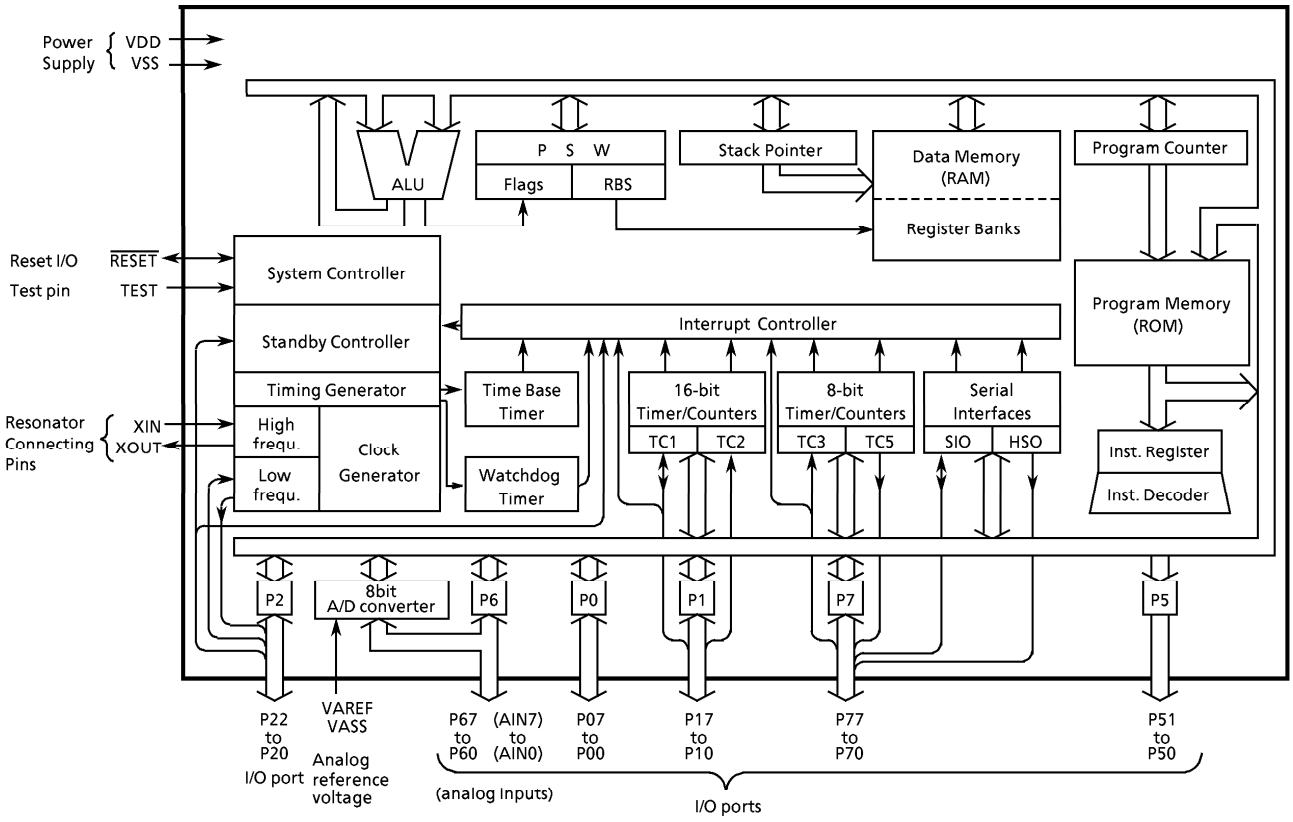
IC201 - TC9704

PIN ASSIGNMENTS (TOP VIEW)

QFP44-P-1010-0.80



BLOCK DIAGRAM



IC201 - TC9704

PIN FUNCTION

PIN NAME	Input / Output	FUNCTION	
P07 to P00	I/O	Two 8-bit programmable input/output ports (tri-state). Each bit of these ports can be individually configured as an input or an output under software control. During reset, all bits are configured as inputs. When used as a divider output or a PPG output, the latch must be set to "1".	
P17, P16	I/O		
P15 (TC2)	I/O (Input)		Timer/Counter 2 input
P14 ($\overline{PPG}$)	I/O (Output)		Programmable pulse generator output
P13 ($\overline{DVO}$)			Divider output
P12 (INT2 / TC1)	I/O (Input)		External interrupt input 2 or Timer/Counter 1 input
P11 (INT1)			External interrupt input 1
P10 ($\overline{INT0}$)			External interrupt input 0
P22 (XTOUT)	I/O (Output)	3-bit input/output port with latch. When used as an input port, the latch must be set to "1".	Resonator connecting pins (32.768 kHz). For inputting external clock, XTIN is used and XTOUT is opened.
P21 (XTIN)	I/O (Input)		
P20 ($\overline{INT5}$ / $\overline{STOP}$)			External interrupt input 5 or STOP mode release signal input
P51, P50	Output	2-bit output port with latch	
P67 (AIN7) to P60 (AIN0)	I/O (Output)	8-bit programmable input/output port (tri-state). Each bit of the port can be individually configured as an input or an output under software control.	A/D converter analog inputs
P77 (HSO)	I/O (Output)	8-bit programable input/output port (tri-state). When used as an input port, a SIO input/output, an external interrupt input or a $\overline{PWM}$/$\overline{PDO}$ output, the latch must be set to "1".	HSO serial data output
P76 ($\overline{HSCK}$)			HSO serial clock output
P75 (SO)			SIO serial data output
P74 (SI)			SIO serial data input
P73 ($\overline{SCK}$)	I/O (I/O)		SIO serial clock input/output
P72 ($\overline{PWM}$ / $\overline{PDO}$)	I/O (Output)		8-bit PWM output or 8-bit programmable divider output
P71 (INT4)	I/O (Input)		External interrupt input 4
P70 (INT3 / TC3)			External interrupt input 3 or Timer/Counter 3 input
XIN, XOUT	Input, Output	Resonator connecting pins for high-frequency clock. For inputting external clock, XIN is used and XOUT is opened.	
RESET	I/O	Reset signal input or watchdog timer output/address-trap-reset output/system-clock-reset output.	
TEST	Input	Test pin for out-going test. Be tied to low.	
VDD, VSS	Power Supply	+ 5 V, 0V (GND)	
VAREF		Analog reference voltage input	

IC VOLTAGE CHART

PIN NO. REF.VOLT P/NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC101	0	0	5.4	0	0	0	0	5.4	0	0	0	5.4	0	5.4	0	0	0	0	0	5.2
IC201	5.3	0.1	0	5.7	0	5.3	5.3	0	5.3	5.3	5.3	0	0	4.4	1.5	2.2	0	5.4	5.4	5.4
IC202	5.2	0	0	5.2	5	5	0	0	0	0	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
IC301	4	4	3.7	0	3.7	4	4	7.6												
IC302	4	4	3.8	0	4	4	4	7.6												
IC303	4	4	3.4	0	4	4	4	7.6												
IC304	4.8	3.2	3.1	0	4.7	4.8	4.8	7.3												
IC305	4	4	3.6	0	3.6	4	4	7.6												
IC307	4	4	4	0	4	4	4	7.6												
IC401	3.5	7.2	0	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.5	3.4	3.5	3.4
IC501	0	0	6.1	6	6.1	11.9	6	0	6	6	5.2	5.1	0	5.2	5.2	5.1	5.8	0	6	11.9
IC801	2.4	2.4	2.2	2.3	2	2.4	2.4	2.8	2.2	2.4	0.7	2.4	2.4	2.3	2.4	2.4	1.2	5	0	5
IC802	0	3.5	4.6	0	5.3	4.6	0	4.7	5.3	5.3	5.3	0	4.8	0	4.9	4.9	4.9	4.9	4.3	4.9
IC803	3.6	3.6	2.4	7.2	5	5	0	2.4	2.4	3.6	3.6	0	7.3	0.1	0.3	3.6	3.6	2.4	2.4	7.9
IC804	3.9	3.4	3.3	0	3.8	3.9	3.9	7.2												
IC805	3.9	3.4	3.3	0	3.8	3.9	3.9	7.2												
IC809	0	0	0	0	0	6	5.3	0	0											
IC901	12	0	8																	
IC902	18.2	0.6	12.8																	
IC903	8	0	6																	
IC904	0	0	0																	
TU101	0	0	0	0	0	0.7	5.3	5.3	5.2	0	0	0	5.4	0	11.2	2.8	0	0	0	0

PIN NO. REF.VOLT P/NAME	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
IC101	5.3	5.3	0.7	5.3																
IC201	4.5	4.5	3.8	5.3	0	5.3	0.7	0.2	1.8	5.3	5.3	5.3	5.3	0	0	0.3	4.7	0.6	2.3	5.3
IC202	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
IC401	3.5	3.5	3.5	3.5	3.5	0	5.3	0												
IC501	6	0	6.1	0	0															
IC801	5	4.8	0	4.8	0.1	2	3.6	2.7	1.2	2.4	2.4	2.4	4.8	0.5	2.4	2.4	2.4	2.4	2.4	2.4
IC802	4.9	4.9	0.1	0	2.4	0	0	0	2	2.6	2.6	4.9	0	2	4.9	0	1.2	2.4	2.4	4.9
IC803	7.9	8	0.8	0.8	0.8	0	0	0												
TU101	5.3	5.3	1.3																	

PIN NO. REF.VOLT P/NAME	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
IC201	5.2	5.2	5.3	5.2																
IC202	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	5.2	3.5	1.7	0	1.6
IC801	0	2.4	2	2.4	1.8	2.2	2.2	2.4												
IC802	2.4	2.4	2.4	0	0	2.4	2.4	4.9	4.9	2.3	0	2.4	0	4.9	0	4.2	3.5	0	2.9	2.3

PIN NO. REF.VOLT P/NAME	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
IC202	5	0.3	5.3	5.2																
IC802	2.4	0	0	2.4	5.2	5.2	0	4.9	2.4	2.4	4.9	4.9	2.4	2.4	0	0	2.4	2.4	0	0

TRANSISTOR VOLTAGE CHART

PART NAME REF.VOLT PIN NO.	Q201	Q202	Q203	Q204	Q205	Q207	Q208	Q209	Q210	Q215	Q301	Q501	Q801	Q802	Q803	Q805
E	4.7	3.5	0.9	0	7.6	0	0	0	0	0	0	0	1.6	1.7	1.1	0
C	4.7	6	6	0	7.5	1.36	0	5.3	5.3	4.4	1.2	0	1.7	0.2	1.6	0
B	4	4.2	0	0.6	6.8	0.77	0.7	0	0	0	0.1	0.6	1.6	1.6	1.1	0.7

PART NAME REF.VOLT PIN NO.	Q806	Q807	Q808	Q810	Q811	Q812	Q813	Q814	Q816	Q818	Q901	Q902	Q904	Q906	Q907	Q908
E	0	0	8	8	0	0	2.3	6.6	0	0.8	18.4	0	18.4	0.2	12	18.4
C	0	0	7.9	8	0	4	7.2	7.2	1.6	0.8	12.1	17.8	18.4	0.2	18.4	0
B	0.7	0.6	7.2	8	0.6	0	6.6	6.6	0	0.3	18.2	0.1	17.7	0.9	12.6	17.8

HARMONY EARLY VERSION SCHEMATIC 120/230RDS

HARMONY PAGE 40 - 1 of 4

HARMONY PAGE 40 - 2 of 4

HARMONY PAGE 40 - 3 of 4

HARMONY PAGE 40 - 4 of 4

SANYO D21

CD MECHANICAL ASS'Y

CD ALIGNMENT PROCEDULE

1. RF LEVEL (EYE PATTERN)
REPEAT PLAY ANY DISC AND CONNECT A SCOPE
SET SCOPE AT AC MODE.
SET SCOPE "+" TO TPRF, "-" TO GND.

2. EF BALANCE
SET SCOPE AT DC MODE.
SET SCOPE "+" TO TPTE, "-" TO VREF.
TEI SHORT WITH TPFC.
CHECK DC BALANCE ON SCOPE (A=B)

IC801 CXA1782BQ

IC802 CXD2508AQ

IC201 RC8747-011

IC401 TDA7313

IC202 LC75824E

IC809 BA6218

TU101

IC501 TDA7381

IC307A IC307B IC301A IC301B IC305A IC305B IC303A IC303B IC302A IC302B IC304A IC304B

IC805 IC804

IC803 KA2526B

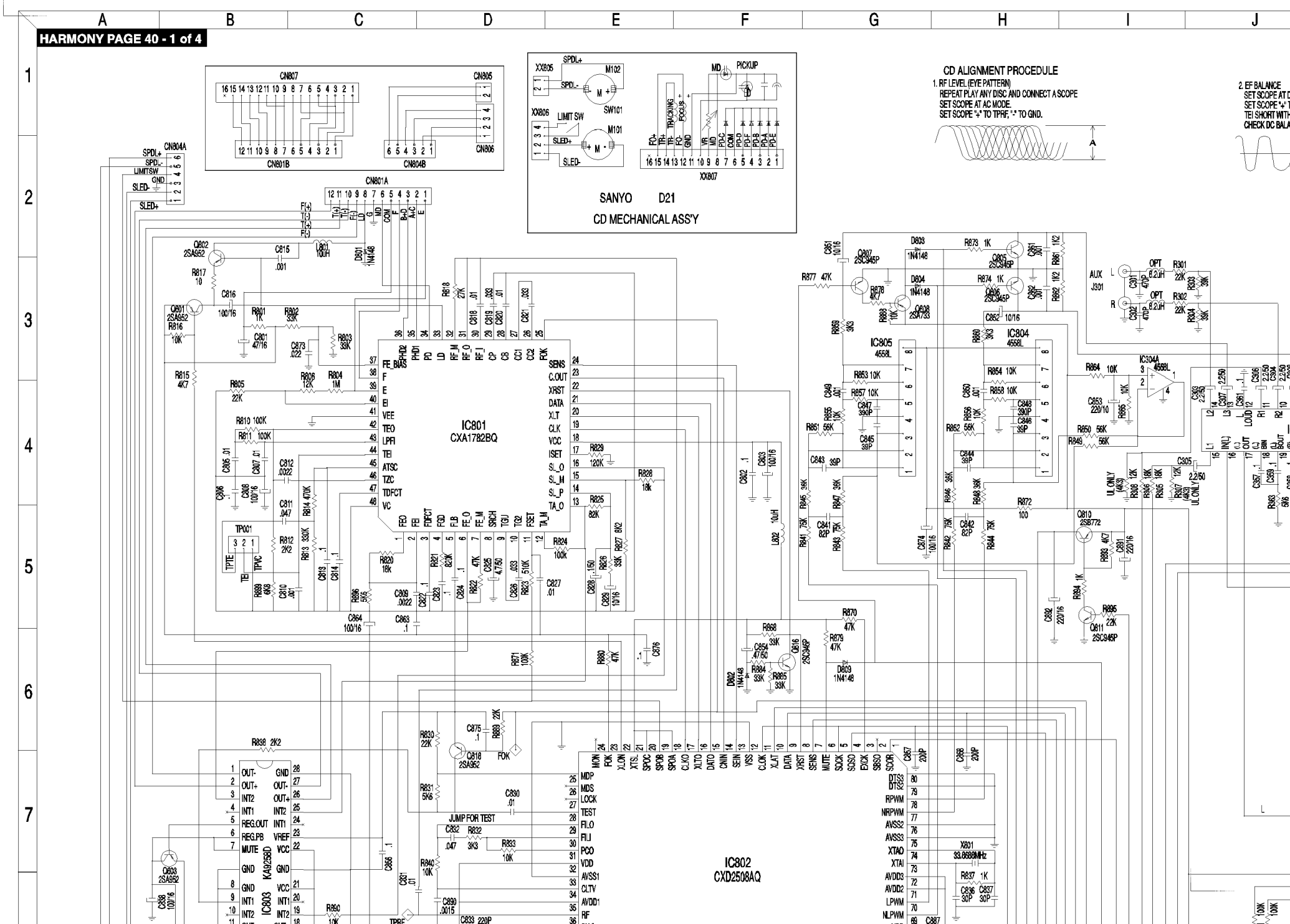
IC051 PT2221

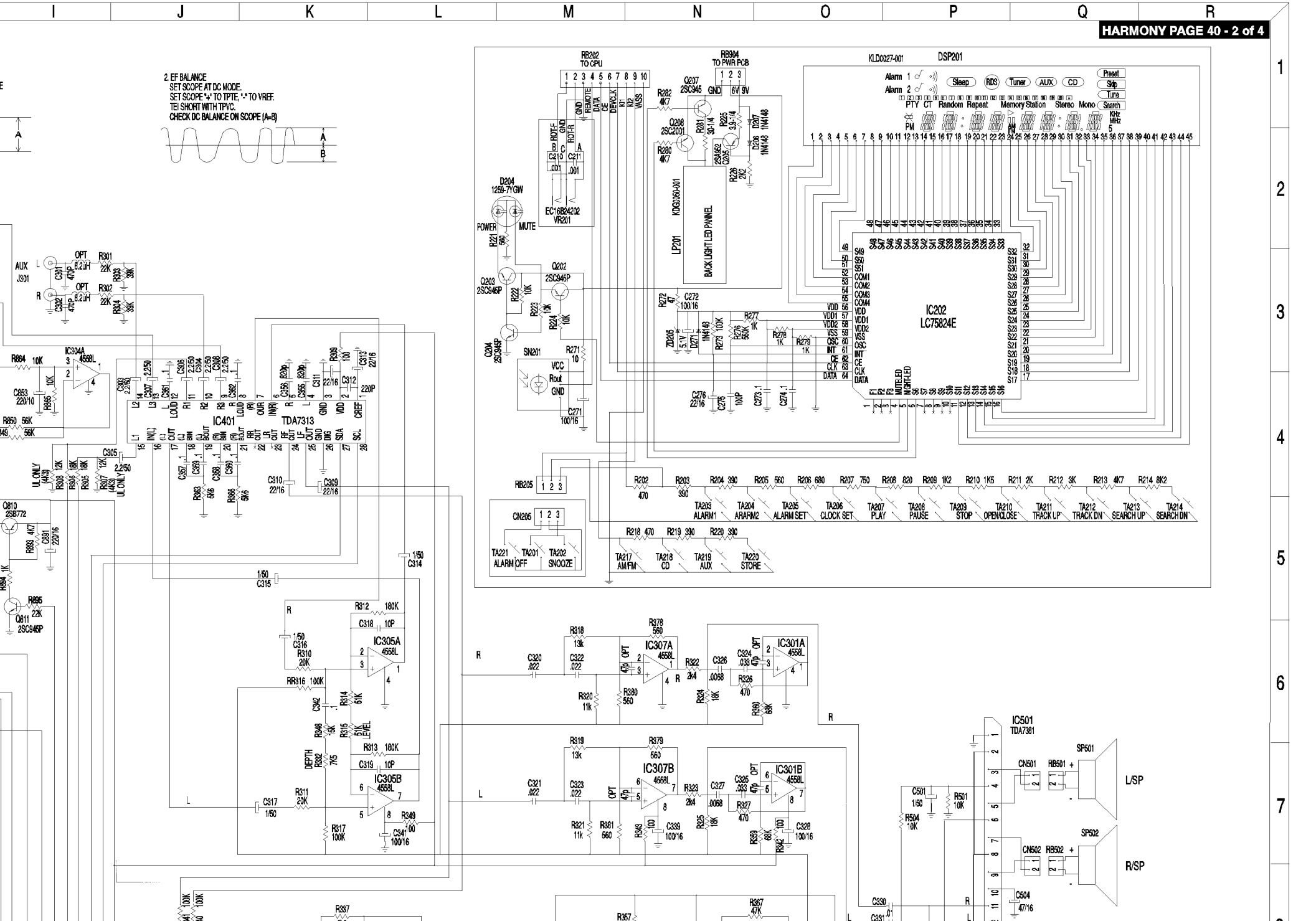
DSP201

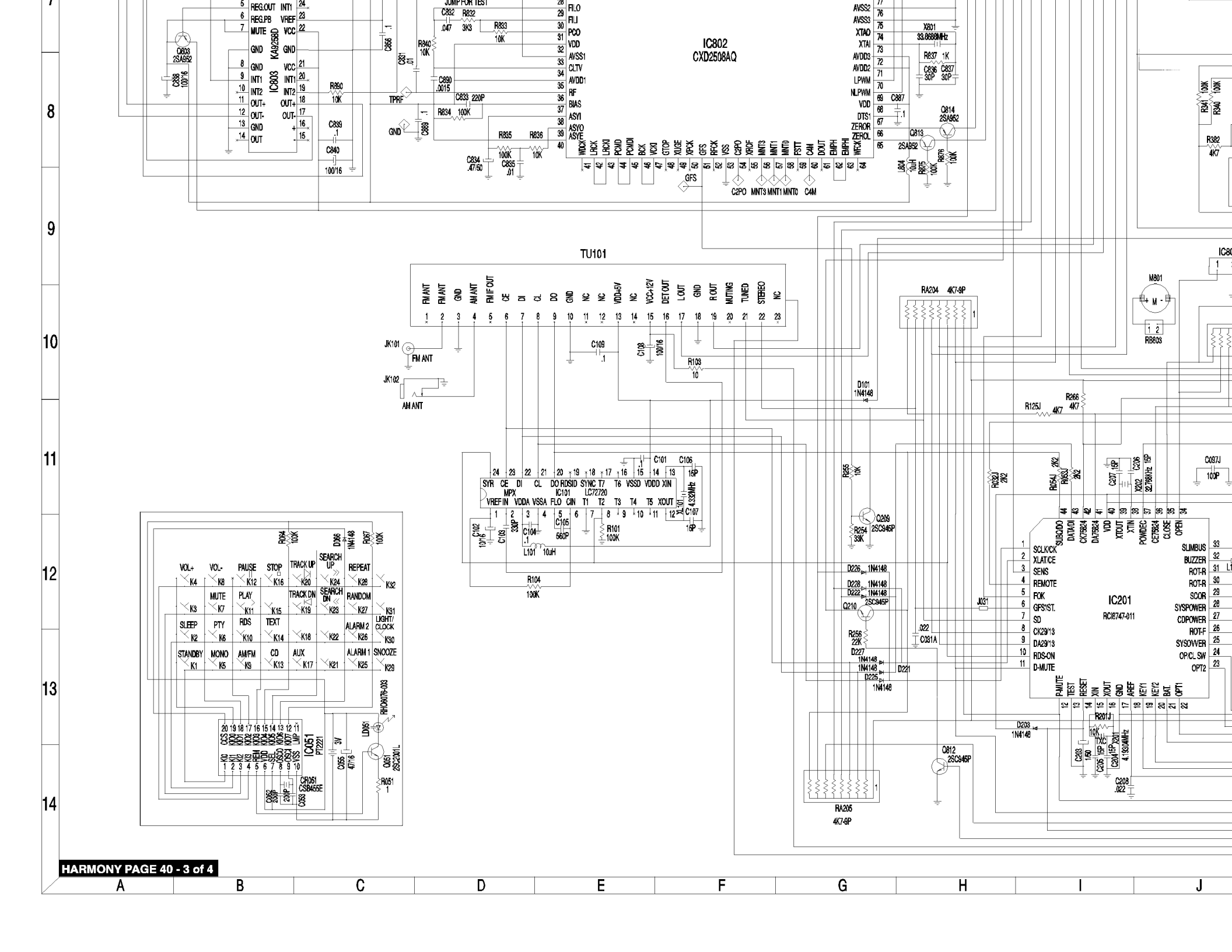
OPTION	R261	R262
VDE	12K	24K
UL	1K2	47K
JAPAN	1K2	150K
SIGA	1K2	24K

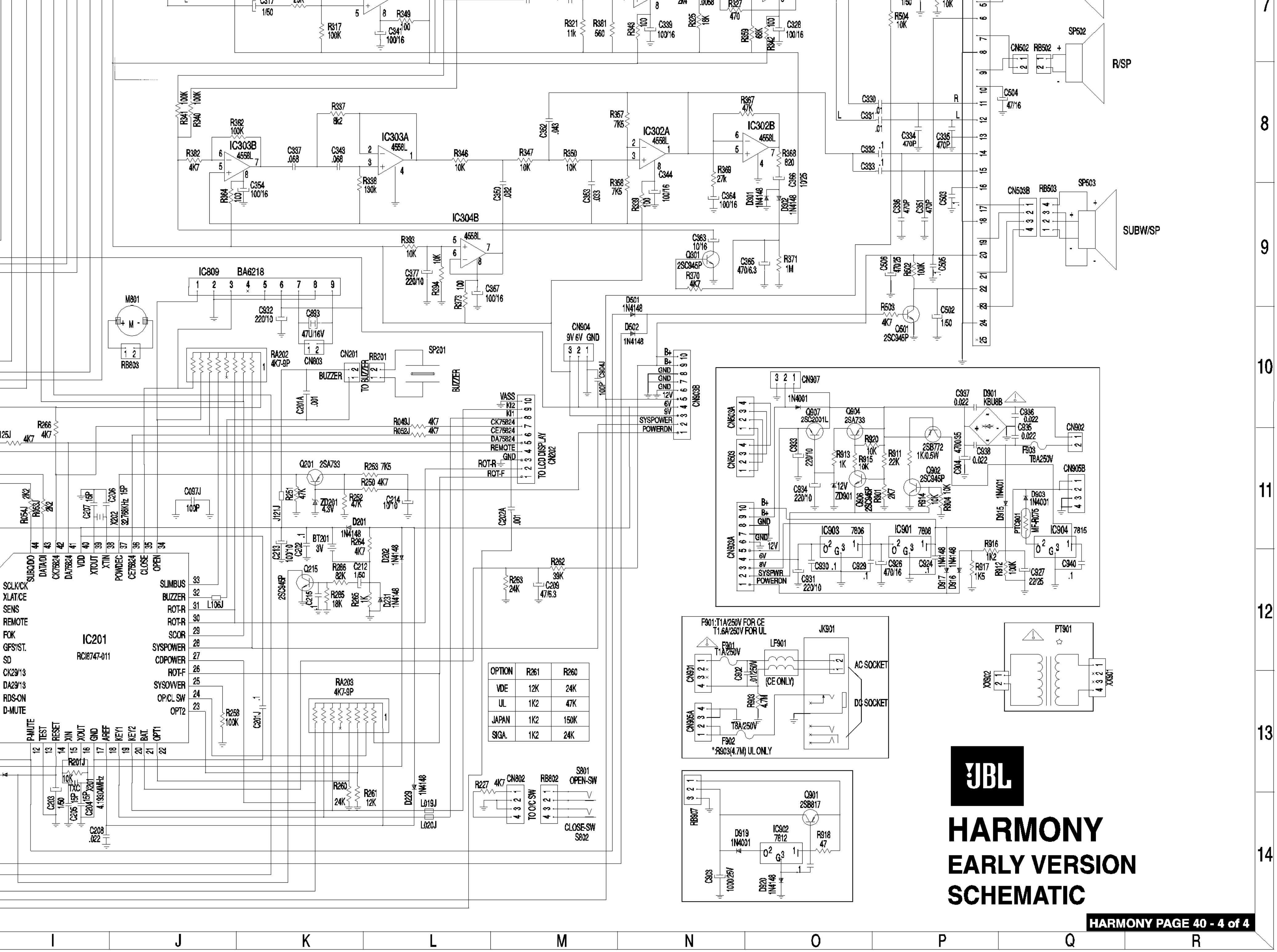
HARMONY
EARLY VERSION
SCHEMATIC

HARMONY PAGE 40 - 1 of 4




2. EF BALANCE
SET SCOPE AT DC MODE.
SET SCOPE "+" TO TPTE, "-" TO VREF.
TEI SHORT WITH TPVC.
CHECK DC BALANCE ON SCOPE (A=B)
RB202 TO CPU
RB304 TO PWR PCB
KLD0027-001
DSP201
Alarm 1
Alarm 2
Sleep
RDS
Tuner
AUX
CD
Preset
Skip
Tune
Search
PTY CT Random Repeat Memory Station Stereo Mono
KDG0050-001
LP201
BACK LIGHT LED PANNEL
IC202
LC75824E
EC16B24202
VR201
POWER
MUTE
IC401
TDA7313
IC304A
4558L
IC305A
IC305B
IC307A
IC307B
IC301A
IC301B
IC501
TDA7381
SP501
SP502
L/SP
R/SP
CN501
CN502
RB501
RB502
CN205
TA201 SNOOZE
TA202
TA203 ALARM1
TA204 ARARM2
TA205 ALARM SET
TA206 CLOCK SET
TA207 PLAY
TA208 PAUSE
TA209 STOP
TA210 OPEN/CLOSE
TA211 TRACK UP
TA212 TRACK DN
TA213 SEARCH UP
TA214 SEARCH DN
TA217 AM/FM
TA218 CD
TA219 AUX
TA220 STORE
TA221 ALARM OFF
AUX J301
IC401 TDA7313


IC802
CXD2508AQ
TU101
IC201
RCI8747-011
IC051
PT2221
IC803
KA9259D
FM ANT
AM ANT
HARMONY PAGE 40 - 3 of 4


IC303B 4558L
IC303A 4558L
IC302A 4558L
IC302B 4558L
IC304B 4558L
IC809 BA6218
M801
RB803
RA202 4K7-9P
CN803
CN201
RB201
SP201
BUZZER
TO BUZZER
CN904 9V 6V GND
D501 1N4148
D502 1N4148
CN903B
B+
GND
12V
6V
9V
SYSPOWER
POWERDN
VASS
KI2
KI1
CK75824
CE75824
DA75824
REMOTE
ROT-R
ROT-F
TO LCD DISPLAY CN202
Q301 2SC945P
Q501 2SC945P
CN502
RB502
SP502
R/SP
CN503B
RB503
SP503
SUBW/SP
Q201 2SA733
ZD201 4.3V
BT201 3V
D201 1N4148
Q215 2SC945P
IC201
RCI8747-011
SUBQ/DO
DATA/DI
VDD
XTOUT
XTIN
POWDEC
CLOSE
OPEN
SCLK/CK
XLAT/CE
SENS
FOK
GFS'/ST.
SD
CK29/13
DA29/13
RDS-ON
D-MUTE
SLIMBUS
SCOR
CDPOWER
SYSOWER
OP/CL SW
OPT2
P-MUTE
TEST
RESET
XIN
XOUT
AREF
KEY1
KEY2
BAT.
OPT1
X201 4.19304MHz
X202 32.768KHz
RA203 4K7-9P
CN802
RB802
TO O/C SW
S801 OPEN-SW
CLOSE-SW S802
CN907
CN503A
CN503
Q907 2SC2001L
Q904 2SA733
2SB772
Q902 2SC945P
Q906 2SC945P
ZD901 12V
D901 KBU8B
CN902
F903 T8A250V
CN905B
D903 1N4001
PTC901 MF-R075
CN903A
SYSPWR
IC903 7806
IC901 7808
IC904 7815
F901:T1A/250V FOR CE
T1.6A/250V FOR UL
F901 T1A/250V
LF901
(CE ONLY)
JK901
AC SOCKET
DC SOCKET
CN901
CN905A
F902 T8A/250V
*:R903(4.7M) UL ONLY
RB907
Q901 2SB817
IC902 7812
D919 1N4001
D920 1N4148
PT901
XX902
XX901
I
J
K
L
M
N
O
P
Q
R
7
8
9
10
11
12
13
14

OPTION	R261	R260
VDE	12K	24K
UL	1K2	47K
JAPAN	1K2	150K
SIGA.	1K2	24K

HARMONY
EARLY VERSION SCHEMATIC

HARMONY LATER VERSION SCHEMATIC 120/230RDS

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SANYO D21
CD MECHANICAL ASS'Y

CD ALIGNMENT PROCEDURE

1. RF LEVEL (EYE PATTERN)
REPEAT PLAY ANY DISC AND CONNECT A SCOPE
SET SCOPE AT AC MODE.
SET SCOPE "+" TO TPRF, "-" TO GND.

2. EF BALANCE
SET SCOPE AT DC MODE.
SET SCOPE "+" TO TPTE, "-" TO VREF.
TEI SHORT WITH TPVC.
CHECK DC BALANCE ON SCOPE (A=B)

IC802
CXD2508AQ

IC809 BA6218

TU101

IC401
TDA7313

IC201
RCI8747-011

IC501
TDA7381

IC803
KA9258D

IC101 LC72720

IC051
PT2221

OPTION	R261	R260
VDE	12K	24K
UL	1K2	47K
JAPAN	1K2	150K
SIGA	1K2	24K

HARMONY
LATER VERSION SCHEMATIC

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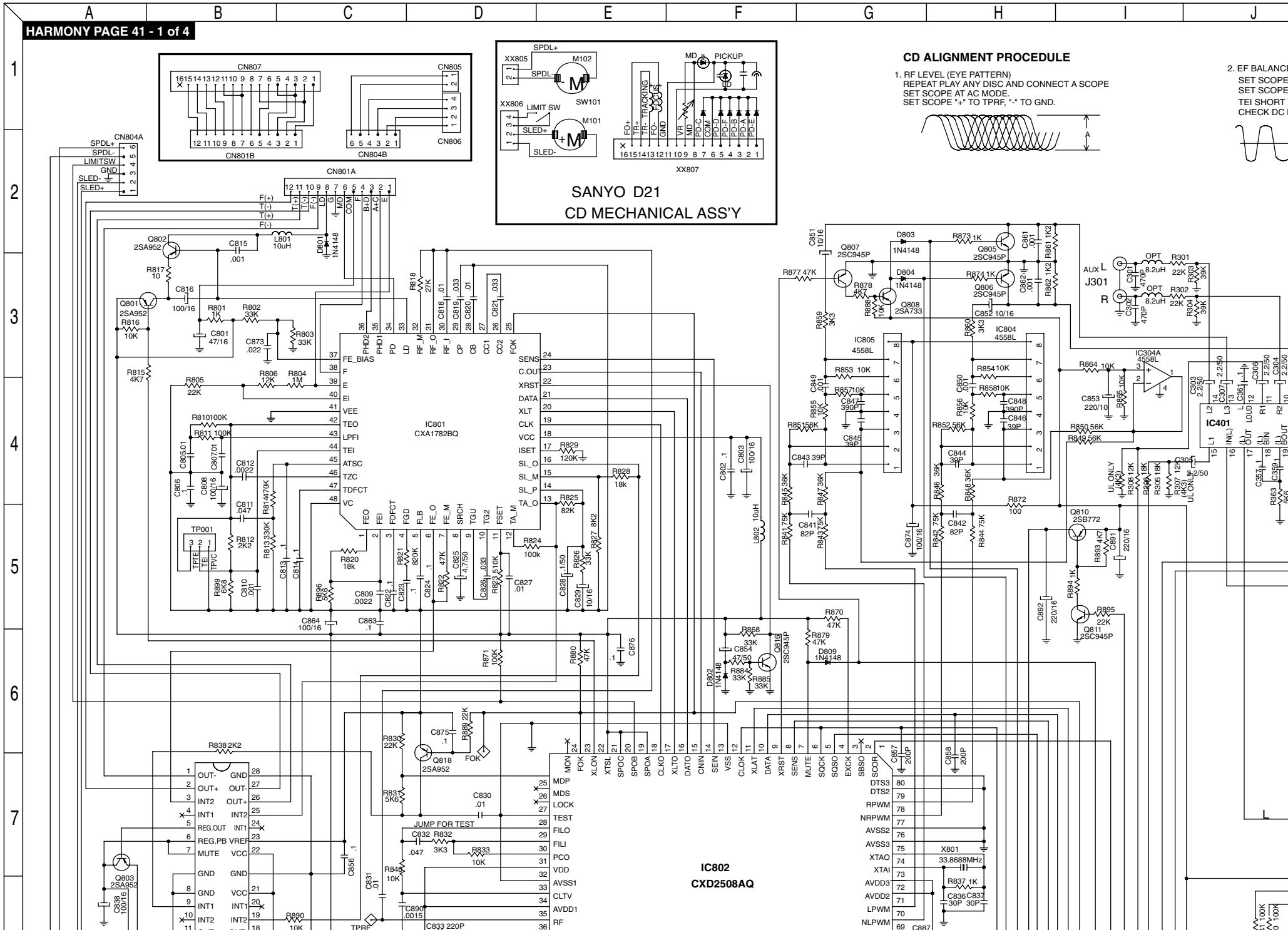


ER VERSION SCHEMATIC 120/230RDS

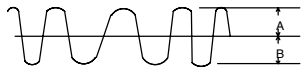
I J K L M N O P Q R

1 2 3 4 5 6 7

SCOPE

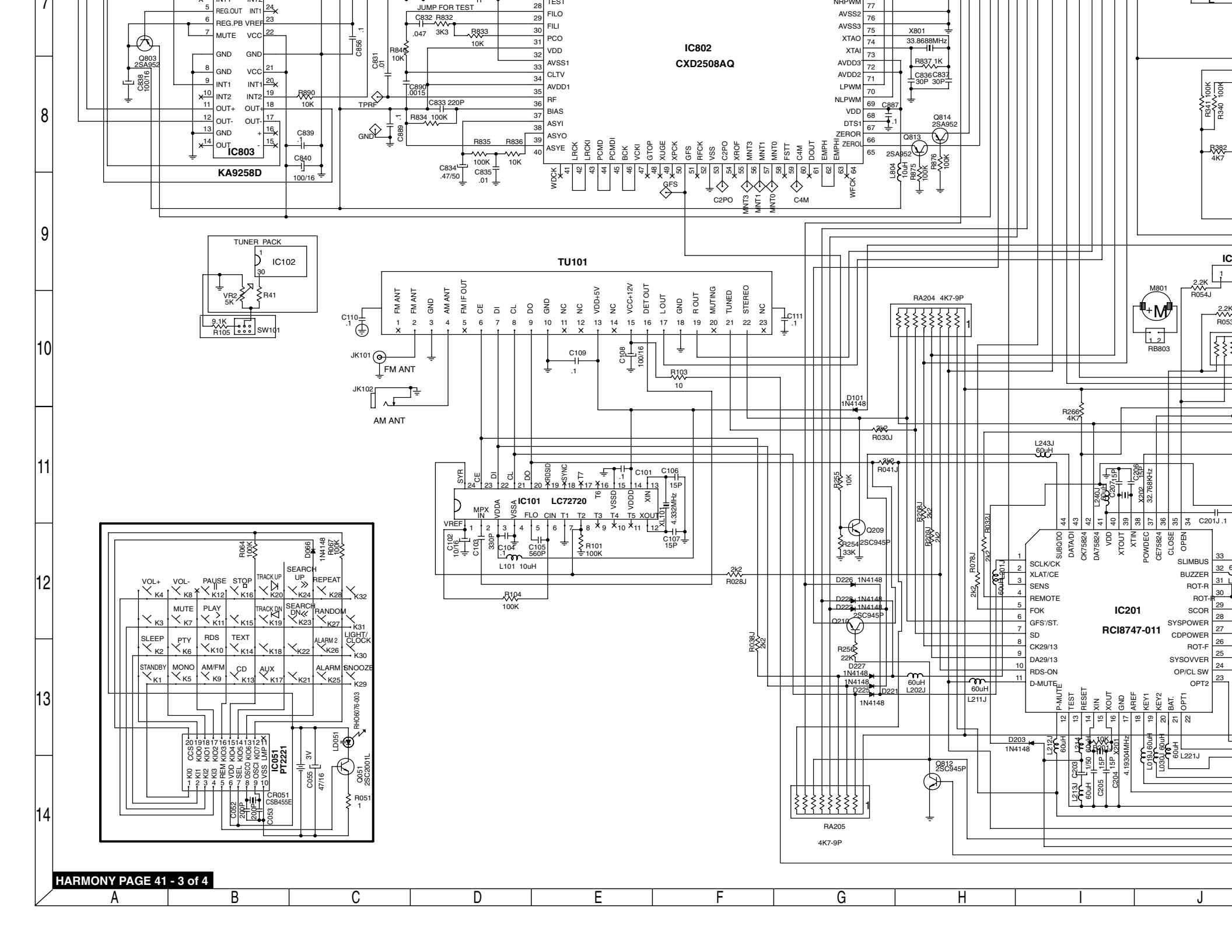
A

2. EF BALANCE
SET SCOPE AT DC MODE.
SET SCOPE "+" TO TPTE, "-" TO VREF.
TEI SHORT WITH TPVC.
CHECK DC BALANCE ON SCOPE (A=B)



RB202 TO CPU
RB904 TO PWR PCB
KLD0027-001
DSP201
Alarm 1
Alarm 2
Sleep
RDS
Tuner
AUX
CD
Preset
Skip
Tune
Search
PTY CT Random Repeat Memory Station Stereo Mono
PM
AM FM
KHz MHz
Q207 2SC945 GND 6V 9V
Q208 2SC2001
Q205 2SA952
D206 D207 1N4148 1N4148
D204 1259-7YGW
POWER MUTE
EC16B24202 VR201
KDG0050-001
LP201
BACK LIGHT LED PANNEL
Q202 2SC945P
Q203 2SC945P
Q204 2SC945P
SN201
VCC Rout GND
IC202 LC75824E
VDD56 VDD157 VDD258 VSS59 OSC60 INT 61 CE 62 CLK 63 DATA64
MUTELED NIGHT-LED
ZD205 5.1V
RB205
CN205
TA203 ALARM1
TA204 ARARM2
TA205 ALARM SET
TA206 CLOCK SET
TA207 PLAY
TA208 PAUSE
TA209 STOP
TA210 OPEN/CLOSE
TA211 TRACK DN
TA212 TRACK UP
TA213 SEARCH DN
TA214 SEARCH UP
TA221 ALARM OFF
TA201
TA202 SNOOZE
TA217 AM/FM
TA218 CD
TA219 AUX
TA220 STORE

AUX L
J301
R
OPT 8.2uH R301 22K R303 39K
OPT 8.2uH R302 22K R304 39K
IC304A 4558L
IC401
TDA7313
IC305A 4558L
IC305B 4558L
IC307A 4558L
IC307B 4558L
IC301A 4558L
IC301B 4558L
IC501 TDA7381
SP501 L/SP
SP502 R/SP
CN501 RB501
CN502 RB502
DEPTH
LEVEL
UL ONLY


IC803
KA9258D
IC802
CXD2508AQ
TU101
IC102
IC101 LC72720
IC201
RCI8747-011
IC051
PT2221
RA204 4K7-9P
RA205
4K7-9P
FM ANT
AM ANT
JUMP FOR TEST
TUNER PACK
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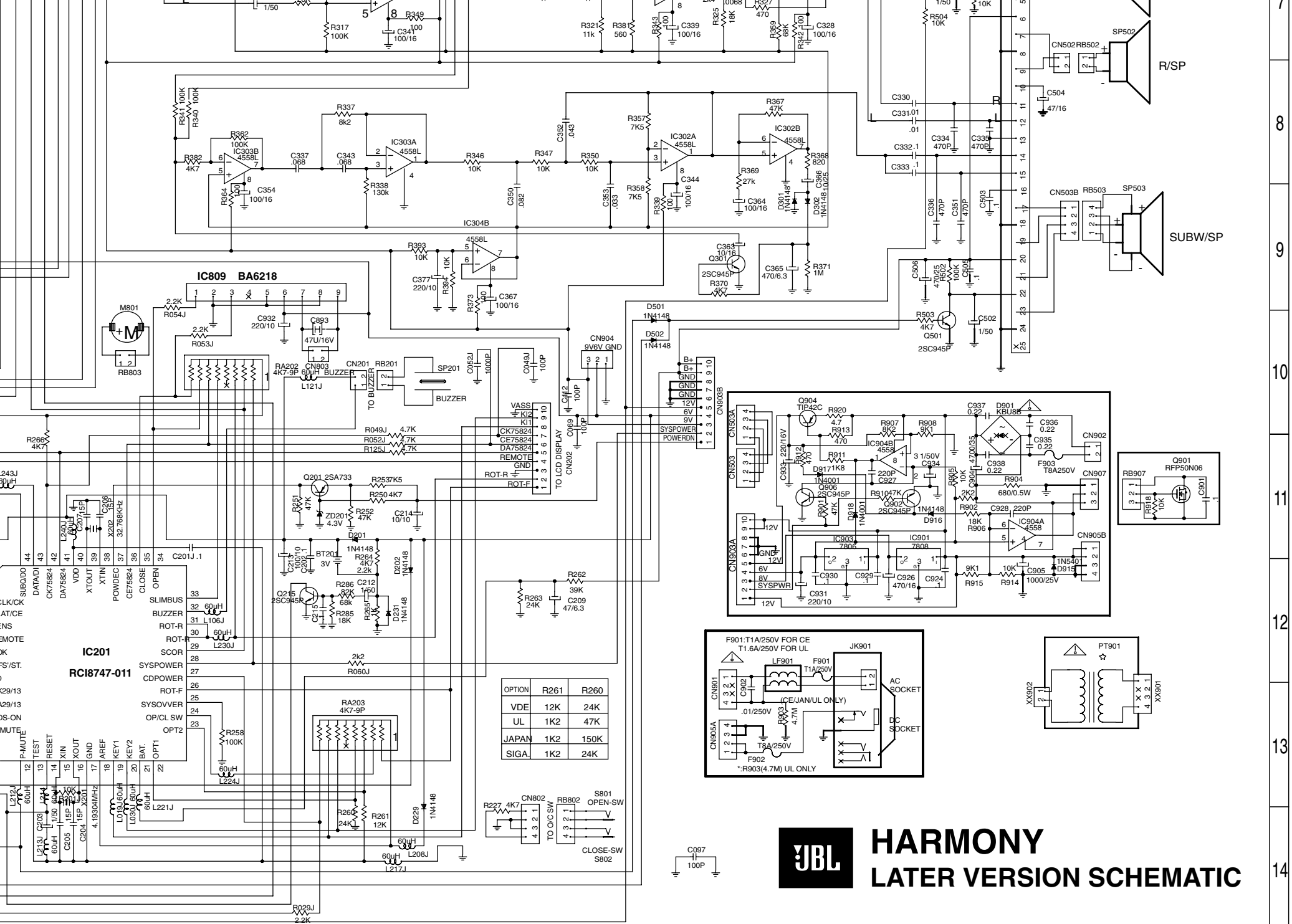
IC809 BA6218
IC201
RCI8747-011
IC303A 4558L
IC303B 4558L
IC304B 4558L
IC302A 4558L
IC302B 4558L
IC903 7808
IC901 7808
IC904A 4558
IC904B 4558
Q904 TIP42C
Q902 2SC945P
Q903 2SC945P
Q501 2SC945P
Q301 2SC945P
Q201 2SA733
Q215 2SC945R
Q901 RFP50N06
D901 KBU8K
D201
D202
D231
D229
D301 1N4148
D302 1N4148
D501 1N4148
D502 1N4148
ZD201 4.3V
BT201 3V
M801
RB803
SP201 BUZZER
SP502 R/SP
SP503 SUBW/SP
CN201 RB201
CN202 TO LCD DISPLAY
CN503B
CN503A
CN503
CN502 RB502
CN503B RB503
CN902
CN903A
CN903B
CN904 9V6V GND
CN905A
CN905B
CN907
RB907
CN802 RB802
S801 OPEN-SW
S802 CLOSE-SW
TO BUZZER
TO O/C SW
F901:T1A/250V FOR CE
T1.6A/250V FOR UL
F901 T1A/250V
F902 T8A/250V
F903 T8A250V
*:R903(4.7M) UL ONLY
(CE/JAN/UL ONLY)
AC SOCKET
DC SOCKET
JK901
LF901
PT901
XX901
XX902
R258 100K
R261 12K
R260 24K
R262 39K
R263 24K
R266 4K7
R317 100K
R321 11k
R381 560
R337 8k2
R338 130k
R346 10K
R347 10K
R350 10K
R357 7K5
R358 7K5
R362 100K
R382 4K7
R364 100
R367 47K
R368 820
R369 27k
R371 1M
R393 10K
R373 100
R370 47K
R503 4K7
R504 10K
R054J 2.2K
R053J 2.2K
R029J 2.2K
R060J 2k2
R049J 4.7K
R052J 4.7K
R125J 4.7K
R2537K5
R250 4K7
R252 47K
R251 47K
R264 4K7 2.2k
R285 18K
R286 82K 68k
R265 1K5
R920 4.7
R913 470
R907 8K2
R908 9K1
R912 470
R911
R906 47K
R905 10K
R904 680/0.5W
R902 2K2
R918 10K
R915 9K1
R914 10K
R906 18K
C2071 15P
C206 15P
C201J .1
C214 10/10
C213 1000/10
C211 .1
C215 .1
C209 47/6.3
C212 1/50
C354 100/16
C337 .068
C343 .068
C339 100/16
C344 100/16
C364 100/16
C366 .025
C367 100/16
C377 220/10
C363 10/16
C365 470/6.3
C352 .043
C350 .082
C353 .033
C341 100/16
C328 100/16
C330
C331 .01
C332 .1
C333 .1
C334 470P
C335 470P
C336 470P
C351 470P
C503 .1
C504 47/16
C505 .1
C506 470/25
C502 1/50
C932 220/10
C893 47U/16V
C052J 1000P
C049J 100P
C112 100P
C069 100P
C097 100P
C927 220P
C928 220P
C930
C929 .1
C926 470/16
C924 .1
C931 220/10
C934 3 1/50V
C937 0.22
C936 0.22
C935 0.22
C938 0.22
C904 4700/35
C905 1000/25V
C901 .1
L240J 10uH
L121J
L106J 60uH
L230J 60uH
L224J 60uH
L221J 60uH
L217J 60uH
L208J 60uH
L212J 60uH
L213J 60uH
L214J 10uH
L019J 60uH
L030J 60uH
X201 4.19304MHz
X202 32.768KHz
RA202 4K7-9P
RA203 4K7-9P
CN903 60uH
OPTION R261 R260
VDE 12K 24K
UL 1K2 47K
JAPAN 1K2 150K
SIGA 1K2 24K
HARMONY
LATER VERSION SCHEMATIC
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